Chapter 3 Revisions to Draft EIS

This chapter presents new information about existing conditions, impacts, and mitigation that has become available since publication of the Draft EIS. Some of the commentors provided additional information in their comments on the Draft EIS (which appear in Chapter 2). New information has also resulted from ongoing refinements to the project design and additional studies.

The following list summarizes the main types of revisions made to the Draft EIS to incorporate new information. Following this summary list, updates to each section of the Draft EIS are described.

The reader is asked to note that excerpts from the Draft EIS that are being updated in this chapter are enclosed in boxes (as this paragraph has been) to distinguish them from other explanatory text.

- The northern segment of the 5.1-mile transmission line interconnect between the proposed power plant and the Smiths Harbor Switchyard has been relocated (see Figure 1-2 in Chapter 1). Instead of going due east from the power plant, this portion of the line would now go southeast toward the northeast corner of the poplar plantation on current Boise Cascade property. The Smiths Harbor Switchyard location has not changed. Entrix, Inc. surveyed the realignment in spring 2002. There is no change to the type of vegetation or habitat that would be disturbed by the realignment. Information from the spring 2002 surveys is summarized in this chapter.
- The air quality analysis (Section 3.2) has been revised and expanded based on updated information and modeling data from the applicant and information added in response to comments on the Draft EIS. Information from the draft Prevention of Significant Deterioration (PSD) permit and draft Notice of Construction (NOC) permit issued for public comment by EFSEC is also described.
- Settlement Agreements addressing mitigation for a number of resources (wildlife, greenhouse gas, and others) have been reached between the applicant and various agencies and organizations. Information from the agreements is described and/or referenced in Appendix A of this EIS. (Copies of the Settlement Agreements are available from EFSEC.)
- The applicant has made minor revisions to the project design since publication of the Draft EIS. For example, one stormwater detention pond is proposed instead of two. The applicant has also reduced the footprint of the power plant facilities to 64 acres with as much as 89 acres potentially restored with native grasses and shrubs. These revisions are described in Chapter 1 and summarized below where they have a bearing on specific environmental resources.
- Since the time the Draft EIS was issued, the applicant and WSDOT have come to an agreement that access to the power plant site will be from Highway 12 using Dodd Road, thus eliminating the proposed temporary access road discussed in the Draft EIS.
- Reports of Examination from the Washington Department of Ecology are now available which describe the detail of proposed water rights transfers. These reports are appended to this Final EIS (Appendix C) and discussed under water resources (Section 3.3) below.

- Changes to the Draft EIS Section 3.11 include the incorporation of the recently constructed Florida Power and Light Energy wind farm in both text and visual simulations. The creation and revision of several visual simulations better reflects project impacts.
- A more detailed discussion of future cumulative gas supply issues has been added to Section 3.17.

3.1 Earth

Additional Information on Geology, Topography, Soils, and Erosion

Additional detail about earth resources (geology, topography, soils, and erosion) was obtained during the spring 2002 surveys by Entrix and is summarized as follows. This information does not substantially change the conclusions about impacts from the Draft EIS.

Based on the U.S. Geological Survey 1:100,000 Walla Walla Geologic Map, the northernmost approximately 0.5 mile of the 5.1-mile interconnect line is underlain by Pleistocene gravels that were deposited by outburst floods of Lake Missoula. The remaining approximately 4.6 miles of the interconnect and switchyard area is underlain by Holocene dune sand deposits.

The northernmost approximately 1.8 miles of the 5.1-mile interconnect is relatively flat to gently rolling terrain that slopes west toward the Columbia River. The remaining 3.3 miles of the interconnect is gently rolling to rolling, with a steeper slope to the south and southwest.

Agricultural activities and irrigation have stabilized or partially stabilized much of the terrain near the plant site, pipeline laterals, interconnect, switchyard, and the northern half of the transmission line right-of-way. However, much of the terrain southward from Juniper Canyon to the Potholes area is not under cultivation and is relatively sensitive to wind erosion. Access roads along the southern portion of the interconnect and in the vicinity of the proposed switchyard area also appear to be sensitive to erosion. Erosion is evident in silty, sandy road cuts along existing access roads in this area. Much of the land along the 5.1-mile interconnect and transmission right-of-way is cultivated, although wind erosion is pervasive along existing project area access roads where there is no vegetation.

The erosion factors (K-values) for most soils along the 5.1-mile interconnect, the transmission line right-of-way, associated access roads, and in the vicinity of the switchyard range between 0.15 and 0.32 (USDA 1964, 1984). These values indicate that there is a moderate to high potential for water-caused soil erosion. Most soils found in these areas are also highly to very highly susceptible to wind erosion when protective vegetation is lacking or disturbed. Similarly, bare or sparsely vegetated ground would be susceptible to erosion by surface runoff during intense precipitation (summer cloudbursts) or rapid snowmelt. An updated description of the wind groups and K values for each soil type in the project area is provided in Appendix B of this Final EIS.

In conclusion, the construction, operation, and maintenance of the transmission line structures would unavoidably impact soil by removing land from production. However, because the limited area required for these structures would be spread over the entire corridor, the impact is not considered to be significant. As stated in the Draft EIS, the proposed project includes numerous elements to mitigate environmental impacts to geology, soils, topography, and erosion during construction and operation of the facility, pipelines, interconnect, switchyard, and transmission lines. See the updated list of mitigation measures in Appendix A of this Final EIS.

Revised Stormwater Detention Pond Design

The applicant has determined that one stormwater detention pond would be constructed instead of two ponds (see updated site plan, Figure 1-3 in Chapter 1). The unlined stormwater detention pond constructed for power plant operations would be sized to contain the 100-year rainfall event of 1.8 inches in a 24-hour period. The stormwater detention pond would cover approximately 2.2 acres. Water from the power plant proper would be collected and diverted through oil/water separators and then to the pond where it would evaporate or percolate into the site soils. Stormwater from the area external to the power plant proper would be collected and routed directly to the pond for evaporation and percolation to groundwater. The applicant is no longer proposing to reuse stormwater for plant operations.

Additional Information on Transmission Line Access Roads

The designation of non-essential roads will primarily be in the Wanaket Wildlife Area. Bonneville personnel and Wanaket managers will work together to identify sections of system roads that will not be necessary to retain. These roads will be scarified and reseeded with plants that are recommended by the Wanaket management.

Vegetative buffers will be maximized to reduce impacts on waterways. Transmission towers for this project would typically be set back a minimum of 100 feet from streamside settings. Roads would access towers on the far side of the towers away from the streamside settings whenever possible. Existing roads and crossings would be used in settings near streams whenever possible. Only one new culvert would need to be installed in a drainage crossing. This crossing is a seasonal summer crossing caused by irrigation of nearby pasture land. If a new spur road is needed near a pond or stream setting, a 30-foot minimum distance from high water mark will be maintained.

3.2 Air Quality

The air quality section from the Draft EIS has been reprinted here in its entirety. It contains changes based on updated air quality information and modeling data from the applicant, as well as new information incorporated in response to comments on the Draft EIS.

3.2.1 Existing Conditions

3.2.1.1 Climate

The project site is located in a semiarid region of southeastern Washington, within the southeastern part of the Columbia Basin. The Columbia Basin is bounded on the south by the high country of central Oregon, on the north by the mountains of western Canada, on the west by the Cascade Range, and on the east by the Blue Mountains and the North Idaho Plateau. Two predominant mountain ranges, the Cascade Mountain Range to the west and the Bitterroot Mountain Range to the east, influence the climate of the project area.

The temperatures in the area are generally hot in the summer and cold in the winter. The mean maximum and minimum temperatures at the Pasco Municipal Airport during the month of July are 92°F and 59°F, respectively, and the mean maximum and minimum temperatures recorded during the month of January are 39°F and 24°F, respectively. The mean monthly relative humidity varies from a low of 30% in the month of July to a high of 83% in the month of December. The annual average relative humidity is 56%.

Prevailing winds from the south-southwest occur about 22.4% of the time. During the spring and the summer the frequency of south-southwesterly winds is the greatest. The annual average wind speed is 9.8 miles per hour (mph). Winds are lowest during the fall, averaging 8.0 to 8.9 mph, and highest in the summer, averaging 9.4 to 11.7 mph. Wind speeds that are well above average are usually associated with southwesterly winds.

3.2.1.2 Odor

The project area includes three existing industrial facilities that occasionally generate various types of odors: the Boise Cascade Corporation Wallula Mill; the Iowa Beef Processors slaughterhouse; and the J.R. Simplot Company cattle feedlots. Odors include methyl mercaptan odors from the mill, digesting offal wastes in fields from the slaughterhouse, and manure odors from more than 50,000 cattle in the feedlots.

3.2.1.3 Air Quality Standards

Ambient Air Quality Standards

The Clean Air Act of 1970 empowered the U.S. Environmental Protection Agency (EPA) to promulgate air quality standards for six common air pollutants: ozone, carbon monoxide (CO), lead, nitrogen dioxide (NO2), particulates and sulfur dioxide (SO2). These standards include primary standards designed to protect health and secondary standards (primarily visibility) to protect public welfare. These National Ambient Air Quality Standards (NAAQS) reflect the relationship between pollutant concentrations and health and welfare effects. The Washington Department of Ecology adopted standards similar to the NAAQS and included standards for total suspended particulate matter.

Table 3.2-1 summarizes the federal and state primary and secondary standards for the six pollutants, and the averaging time for determining compliance with the standards. It also presents the increments under the EPA's Prevention of Significant Deterioration (PSD) program and the EPA PSD Class II significance levels for air quality that are applicable to the proposed project.

State and Local Emission Limits

As part of the PSD process, EFSEC is reviewing the applicant's evaluation of alternative emission control technologies. The determination of which control technology best protects ambient air quality is made by the regulatory agency on a case-by-case basis and considers the associated economic, energy, and environmental costs. The analysis for Best Available Control Technology (BACT) identifies pollutant-specific alternatives for emission control, and the costs and benefits of each alternative technology. BACT would be used to reduce emissions of toxic air pollutants, along with criteria pollutants. For example, natural gas is BACT for fuel because of its lower emissions of criteria and toxic air pollutants over other fuels, such as fuel oil or coal.

Combustion controls also reduce criteria pollutants by optimizing combustion and reducing pollutants emitted in the exhaust stream.

The determination of BACT at the time of the final air emissions permit review would define the emission limits for the project. BACT for nitrogen oxides (NOx) typically consists of dry low-NOx technology, or selective catalytic reduction (SCR), which is a post-combustion control that uses ammonia and a catalyst to reduce NOx emissions. However, any unreacted ammonia is emitted as a toxic air pollutant and is regulated by Washington state.

Prevention of Significant Deterioration

PSD review regulations apply to proposed new or modified sources located in an attainment area that have the potential to emit criteria pollutants in excess of predetermined de minimus values (Code of Federal Regulations, 40 CFR Part 51). For new generation facilities, these values are 100 tons per year of criteria pollutants for 28 specific source categories, including power generating facilities; and 250 tons per year for all others. The Wallula Power Project would be a PSD source because it would emit in excess of 100 tons per year of NOx, CO, PM10, and VOC. The PSD review process evaluates existing ambient air quality, the potential impacts of the proposed source on ambient air quality, whether the source would contribute to a violation of the NAAQS, and a review of the BACT. PSD restricts the degree of ambient air quality deterioration that would be allowed. Increments for criteria pollutants are based on the PSD classification of the area. Class I areas are assigned to federally protected wilderness areas, such as national parks, and allow the lowest increment of permissible deterioration. This essentially precludes development near these areas. Class II areas are designed to allow for moderate, controlled growth, and Class III areas allow for heavy industrial use.

The Class I area nearest the project site is the Eagle Cap Wilderness located about 115 kilometers (71.5 miles) southeast of the proposed project. The area around the proposed project is designated Class II where less stringent PSD increments apply. Class I and Class II increments are shown with the ambient standards in Table 3.2-1.

Nonattainment Area Requirements for PM10

New Source Review (NSR) permitting is required for major emission sources locating or expanding in nonattainment areas. Emission levels associated with designating a facility as major for NSR depend on the nonattainment area classification. The only nonattainment designation applicable to the proposed project is for PM10, because the proposed location for the project is in a serious PM10 nonattainment area. (PM10 refers to particulate matter less than 10 microns in diameter.)

As part of the Notice of Construction (NOC) permit application process, the requirements of Chapter 173-400-112 WAC for permitting new or modified sources located in a nonattainment area specify the conditions that must be met for a new source to receive approval to construct and operate. These requirements include the use of Lowest Achievable Emission Reduction (LAER) for the nonattainment pollutant (PM10), emission offsets for the nonattainment pollutant (i.e., the applicant must find a way to reduce PM10 emissions in the area enough to offset at least 100% of the project's emissions and to provide a net air quality benefit), and demonstration that the new source would not cause or create any new exceedance of the ambient air quality standard and that it would not violate the requirements for reasonable further progress established by the state implementation plan.

Table 3.2-1. Ambient Air Quality Standards

							Increments		
	National Primary[a]		**National Secondary**[a]		**State of Washington**[a]		**Class I PSD**	**Class II PSD**	**EPA Class II Significance Levels**
	Pollutant Concentrations								
	ppm	μg/m³	Ppm	μg/m³	ppm	μg/m³	μg/m³	μg/m³	μg/m³
Total Particulate Matter (TSP)									
Annual Geometric Mean	-	-	-	-	-	60	-	-	-
24-hour Average	-	-	-	-	-	150	-	-	-
Particulate Matter (PM10)									
Annual Arithmetic Mean	-	50	-	50	-	50	4	17	1
24-hour Average	-	150	-	150	-	150	8	30	5
Inhalable Particulate Matter (PM2.5)									
Annual Arithmetic Mean	-	15	-	15	-	-	-	-	-
24-hour Average	-	65	-	65	-	-	-	-	-
Sulfur Dioxide (SO2)									
Annual Average	0.03	80	-	-	0.02	52[b]	2	20	1
24-hour Average	0.14	365	-	-	0.10	262[b]	5	91	5
3-hour Average	0.14	-	0.5	1300	-	-	25	512	25
1-hour Average	-	-	-	-	0.40 [c]	1050[b]	-	-	-
Carbon Monoxide (CO)									
8-hour Average	9	10,000	-	-	9	10,000[b]	-	-	500
1-hour Average	35	40,000	-	-	35	40,000[b]	-	-	2,000
Ozone (O3)[d]									
1-hour Average	0.12	235	0.12	235	0.12	235[b]	-	-	-
8-hour Average	0.08	176	0.08	176	-	-	-	-	-
Nitrogen Dioxide (NO2)									
Annual Average	0.053	100	0.053	100	0.05	100	2.5	25	1
Lead (Pb)									
Quarterly Average	-	1.5	-	1.5	-	-	-	-	-

μg/m³ = micrograms per cubic meter; ppm = parts per million by volume, dry basis

[a] Annual standards never to be exceeded; short-term standards not to be exceeded more than once per year unless otherwise noted.

[b] Values are calculated equivalent to regulated value.

[c] Then 0.40 ppm standard is not to be exceeded more than once per year, additionally, the 0.25 ppm standard is not to be exceeded more than twice in 7 days.

[d] The ozone 1-hour standard applies only to areas that were designated nonattainment when the ozone 8-hour standard was proposed in July 1997. This provision would allow a smooth, legal, and practical transition to the 8-hour standard. Currently, the 1-hour standard applies while the 8-hour standard is in litigation. The ozone 8-hour standard is included for information only. A 1999 federal court ruling blocked implementation of the standards, and EPA has asked the U.S. Supreme Court to reconsider that decision.

Source: Wallula Generation (2001).

Hazardous Air Pollutant Regulations

The Clean Air Act Amendments of 1990, under revisions to Section 112, required the EPA to list and promulgate National Emission Standards for Hazardous Air Pollutants (NESHAPS) in order to control, reduce, or otherwise limit the emissions of hazardous air pollutants from categories of major and area sources. As these standards are promulgated they are published in Title 40 of the Code of Federal Regulations, Part 63 (40 CFR 63). Stationary combustion gas turbines are on the list of 174 categories of major and area sources that would be henceforth subject to emission standards. The project combustion gas turbines may therefore be subject to 40 CFR Part 63, which would require the Maximum Achievable Control Technology (MACT). Standards for stationary combustion gas turbines were scheduled for promulgation by November 15, 2000, but have not yet been proposed. MACT standards are intended to reduce emissions of air toxics through the installation of control equipment rather than through risk-based emission limits.

Most of the MACT regulations apply only to “major hazardous air pollutant sources” defined as those emitting at least 10 tons of any single federally regulated hazardous air pollutant or 25 tons of aggregate hazardous air pollutants. The Wallula plant’s emissions of federally regulated hazardous air pollutants would be less than those thresholds, so the Wallula plant would not be a “major hazardous air pollutant source.” Therefore, the upcoming MACT requirements would not apply to the Wallula project.

General Conformity Requirements

The air quality conformity regulations were developed by EPA as part of the 1990 Clean Air Act amendments to ensure that non-stationary projects (which previously had not required any air quality approvals) took appropriate steps to minimize air quality impacts. The federal General Conformity regulations are specified in 40 CFR Part 93, Subpart B. These requirements apply to federally-funded projects in nonattainment areas, if the project is not already covered by other air quality permits. Portions of Bonneville’s transmission line would be constructed inside the Wallula PM10 nonattainment area, so those portions of the project are subject to the General Conformity regulations. Bonneville must complete the following steps under the regulation:

- Estimate maximum annual emissions of PM10 during construction and/or operation of the portions of the project inside the nonattainment area. Compare the estimated annual emission rate to the applicability thresholds. For a serious nonattainment area the PM10 threshold is 70 tons per year for both construction and operation.
- If the annual PM10 emissions are below the 70 tons per year applicability threshold, describe the finding as part of the NEPA environmental documentation. No further action is required beyond that.
- If the annual PM10 emissions exceed the 70 tons per year threshold, conduct air quality modeling to determine if the project would increase PM10 concentrations within the nonattainment area. If modeling shows the project would increase PM10 concentrations, then develop emission estimates and/or offsets to reduce the project’s impacts.

Permitting for PM2.5 Emissions

EPA requires state regulatory agencies to complete ambient monitoring for PM2.5 to define nonattainment area status, and then to establish air quality permitting requirements for sources emitting PM2.5. The Department of Ecology has not yet completed the process of specifying permit requirements for PM2.5 (e.g., PSD increments, Significant Impact Levels, etc.), and the applicant was not required to model PM2.5 concentrations as part of the PSD application. Therefore, this Final EIS does not attempt to assess compliance with pending PM2.5 regulations.

3.2.1.4 Existing Air Quality

PM10 and PM2.5

Because of the rural nature of Walla Walla County and the lack of large industrial sources of pollutants, Walla Walla County has been classified by EPA and Ecology as an attainment area for all criteria pollutants except particulate matter (PM10). There are no monitoring stations in southeastern Washington for those criteria pollutants that are in attainment, and therefore there is no local source available that characterizes existing concentrations of these pollutants. Such information is normally not required for an impact analysis when the concentrations of criteria pollutants that are generated by a new major source do not exceed EPA's significant impact levels.

EPA made a finding that the Wallula area did not meet the 24-hour national air quality standard for PM10 by December 31, 1997 as required by the federal Clean Air Act. As a result of that finding, the Wallula area has been reclassified from a moderate to a serious PM10 nonattainment area.

The Washington Department of Ecology maintains a network of air quality monitoring stations throughout the Eastern Regional Office territory. There are currently two PM10 monitoring stations in Walla Walla, Washington (Monitor I.D. 530710005-1) and the site located at Nedrow Farm, Wallula Junction, Walla Walla County, Washington (Monitor I.D. 530711001-2). The Nedrow Farm site is located closest to the Wallula Power Project. During the most recent 5 years for which data are available from the EPA, the Nedrow Farm site has recorded two maximum readings, one in 1997 and one in 2000, that were in excess of the 24-hour PM10 standard of 150 micrograms per cubic meter ($\mu g/m^3$). Both the maximum 24-hour average and the annual average readings taken at the Nedrow Farm monitoring station are presented in Table 3.2-2.

Table 3.2-2. Maximum 24-Hour and Annual Average PM10 Concentrations, Wallula PM10 Monitoring Station (Nedrow Farms Station)

	NAAQS ($\mu g/m^3$)	Year				
		1996	1997	1998	1999	2000
Maximum 24 Hour Average ($\mu g/m^3$)	150	148	210	136	90	211
Annual Average ($\mu g/m^3$)	50	32.7	35.5	39.7	35.0	32.6
Source: Wallula Generation (2001).						

Reclassification of Wallula from moderate to serious requires the Washington Department of Ecology to begin an 18-month planning process to develop a plan to improve air quality to meet the standard. The additional actions and control measures needed to bring the Wallula area into attainment of the 24-hour PM10 standard would depend on what is learned during the planning process.

EPA directed state and local agencies to collect monitoring data for ambient PM2.5 concentrations and to propose PM2.5 nonattainment areas. The Department of Ecology has operated PM2.5 monitoring stations throughout the state since 1999. The PM2.5 monitoring stations nearest the Wallula site are at Kennewick and Walla Walla. As described below, neither station has measured PM2.5 concentrations approaching EPA's ambient standard:

- At Kennewick the highest measured 24-hour values for the years 2001, 2000 and 1999 were 22 $\mu g/m^3$, 36 $\mu g/m^3$ and 22 $\mu g/m^3$, respectively. All of the maximum values were well below the NAAQS of 65 $\mu g/m^3$.
- At Walla Walla the maximum 24-hour value for the year 2001 was 22 $\mu g/m^3$, which is well below the NAAQS of 65 $\mu g/m^3$.

Secondary Ammonium Nitrate Particulate Matter

Atmospheric ammonium nitrate particles are secondary aerosol formed in the atmosphere by reaction with ammonia gas, nitrogen oxides, and nitric acid. Ammonium nitrate formation generally occurs only during winter months. Ammonium nitrate is a potential issue for the Wallula project because the power plant would emit large amounts of ammonia gas. If the ammonia emission reacted in the downwind plume to form ammonium nitrate particles, then it is conceivable the ammonium nitrate could exacerbate the region's existing air pollution problems. In agricultural regions of California where PM2.5 concentrations exceed the NAAQS, ammonium nitrate is the dominant chemical component of PM2.5 during the winter months and is therefore of concern. The California regulatory agencies are considering requiring emission controls for ammonia sources.

The only ambient air quality monitoring station currently measuring ammonium nitrate concentrations is the Interagency Monitoring of Protected Visual Environments (IMPROVE) Wishram site at the eastern end of the Columbia River Gorge National Scenic Area (CRGNSA). Historical data from that site for the period 1993 - 1997 were evaluated and showed the following trends:

- Measured PM10 and PM2.5 were well below the respective NAAQS limits. The highest measured PM10 and PM2.5 concentrations were 53 $\mu g/m^3$ and 23 $\mu g/m^3$, respectively. There was no clear seasonal trend in the measured concentrations.
- Particulate nitrate concentrations showed a clear seasonal trend, with the highest values occurring in the winter months. The highest measured wintertime ammonium nitrate concentration was 12 $\mu g/m^3$. During the winter ammonium nitrate accounted for up to 45% of the total PM10 concentration.

The Wishram data indicate it is unlikely that secondary ammonium nitrate contributes to PM10 or PM2.5 concentrations exceeding the NAAQS limits near the Wallula site. However, it appears likely that ammonium nitrate is a significant contributor to existing wintertime regional haze at the CRGNSA.

Existing Ecosystem Impacts Along Eastern Side of Cascade Range

The U.S. Forest Service is the federal land manager tracking existing air quality impacts to the CRGNSA and wilderness areas along the east side of the Cascade mountains. The agency has documented the following existing ecosystem impacts caused by current air pollutant concentrations.

Regional Visibility Degradation. The agency has documented that existing regional visibility at the Wishram IMPROVE site is impacted compared to natural background conditions. These findings were formally provided to EPA Region 10 (U.S. Forest Service 2002). Regional visibility impacts are quantified by the light extinction coefficient (b_{ext}, with units of inverse megameters or Mm^{-1}), which indicates how particles in the atmosphere obscure regional vistas. The natural background b_{ext} at Wishram is estimated to be 20 Mm^{-1}. Extinction values higher than natural background indicate some level of degraded visibility. U.S. Forest Service data from Wishram indicate frequent visibility degradation, as follows:

- Natural background (b_{ext} < 20) occurs less than 5% of the time.
- Visibility is "noticeably impaired" (20 < b_{ext} < 40) 54% of the time.
- Visibility is "moderately degraded" (41 < b_{ext} < 70) 26% of the time.
- Visibility is "severely degraded" (b_{ext} > 70) 15% of the time.

Impacts to Sensitive Lichen Species. Since 1993 the U.S. Forest Service has conducted biomonitoring for air quality impacts to lichen species along the east side of the Cascade mountains (Geiser and Bachman 2002). Because lichens are sensitive to air quality, they can be used as an early warning signal to indicate where air pollution is beginning to affect the forest. The surveys showed that the region's most common lichen species were absent (or present in minimal amounts) in areas where wet deposition of air pollutants (primarily sulfur and nitrogen) was unusually high, despite available habitat for those lichen species. Conversely, certain species of pollutant-tolerant lichens were found to be overabundant in areas with high air pollutant concentrations. These surveys indicate that existing levels of sulfur and nitrogen deposition have affected the ecosystem of forests on the east side of the Cascades in the vicinity of the Columbia Gorge and Mt. Hood.

3.2.2 Impacts of the Proposed Action

3.2.2.1 Construction

Generation Plant

Emissions during the approximately 24-month construction process would consist of fugitive dust and combustion exhaust emissions from construction equipment and vehicles. Fugitive dust emissions would result from dust entrained during project site preparation, on-site travel on paved and unpaved surfaces, and aggregate and soil loading and unloading operations. Wind erosion of disturbed areas would also contribute to fugitive dust.

Combustion emissions would result from diesel construction equipment, various diesel-fueled trucks, diesel-powered equipment (welding machines, electric generators, air compressors, water pumps, etc.), locomotives delivering equipment, and vehicle emissions from workers commuting to the construction site. The applicant evaluated on-site emissions during construction on a monthly basis over the 24-month construction schedule for both fugitive dust and construction equipment emissions. Table 3.2-3 shows the estimated average annual heavy equipment exhaust and fugitive dust emissions for on-site construction activities over the 24-month construction schedule.

Table 3.2-3. Annual Emissions During On-Site Construction (Tons Per Year)

	PM10	NOx	CO	VOC	SOx
Construction Equipment	1.4	20.2	7.0	1.64	0.66
Fugitive Dust	39.6				
Total Emissions	41.0	20.2	7.0	1.64	0.66
Source: Wallula Generation (2001).					

Water Supply Pipeline, Natural Gas Pipeline, and Transmission Line

The construction of the pipelines and transmission line would generate short-term emissions including fugitive dust and construction equipment exhaust emissions. Fugitive dust would be controlled by conventional construction practices (e.g., road watering, covering of dust piles, etc.) to comply with state regulations. The draft NOC permit issued for public comment also addressed fugitive dust control through the requirement of a dust control plan prior to the beginning of construction.

Transmission Line Construction Inside PM10 Nonattainment Area

The portions of the transmission line and the Smiths Harbor Switchyard inside the Wallula PM10 nonattainment area are subject to the federal General Conformity regulation. A full conformity analysis would be required only if PM10 emissions generated inside the nonattainment area exceed 70 tons per year. As shown below, the estimated PM10 emissions during construction are well below 70 tons per year, so the transmission line project would comply with the conformity requirements.

As a rough approximation for purposes of estimating emissions during construction, it is assumed the following items would be constructed inside the nonattainment area:

- 37 transmission towers, each disturbing 0.25 acres (9 total acres),
- 6 miles of new access roads (22 total acres), and
- Smiths Harbor Switchyard (7 acres).

A total of 38 acres of construction would be required inside the nonattainment area. As a rough approximation it was assumed that construction at each site would require 2 months to complete. A PM10 emission factor of 0.11 tons/acre-month is appropriate for general construction activities, assuming routine dust control measures such as roadway watering are conducted at the site (California EPA 1997). Based on the estimated construction acreage and the assumed emission factor, the maximum annual PM10 emissions during construction would be 8.4 tons (38 acres x 0.11 tons/acre-month x 2 months = 8.4 tons).

Because the estimated annual PM10 emissions are much lower than the 70 tons per year applicability threshold for General Conformity, no further action is required to comply with the regulation. Bonneville would mitigate for dust during construction and follow all necessary local or federal requirements.

3.2.2.2 Operation and Maintenance

Generation Plant

Emission Sources and Emission Controls

The principal sources of emissions from the Wallula Power Project during startup and operation would occur from four General Electric (GE) Model 7241 FA combustion gas turbines rated at 167 MW and fired by natural gas, and four HRSGs. Each HRSG would be equipped with low-NOx duct burners rated at 640 million British thermal units per hour (MM Btu/hr), and with SCR and oxidation catalyst systems for the removal of NOx and CO, respectively.

Additional plant equipment would include two nine-cell cooling tower units equipped with special mist eliminators to reduce cooling tower drift emissions; one auxiliary boiler rated at 45,000 pounds/hour (lb/hr) of steam; one 300-horsepower diesel fire pump; and one 910-kilowatt (kW) emergency diesel generator.

The four combustion gas turbines would be equipped with dry low NOx combustors that minimize the formation of NOx and CO. GE would guarantee exhaust concentrations from the combustion gas turbine of 9 parts per million (ppm) for both NOx and CO. The four HRSGs would be equipped with low-NOx duct burners, designed to minimize NOx formation. To further reduce combustion gas turbine and duct burner NOx and CO, SCR and oxidation catalyst control systems would be provided. It is expected that the equipment suppliers would guarantee NOx emissions of 3.0 ppm and CO emissions of 3.5 ppm. Aqueous ammonia would be used in the SCR control system and some unreacted ammonia would exit the plant stack as ammonia "slip." Ammonia slip would be 5 ppm or less.

The Wallula Power Project would have a 45,000 lb/hr auxiliary boiler that is gas fired and provides steam for cold plant startups. The steam would also be used for "soaking" or "heating" of the HRSGs and catalyst during short periods of unit downtime. This would maintain heat and facilitate a quick plant startup. There would also be an emergency diesel generator and a diesel fire pump that would typically be test run for about an hour each month.

A cooling water system would condense the steam coming from the steam turbine. Cooling water would itself be cooled within two 9-cell mechanical-draft cooling towers (one for each power block) each with a circulating water flow rate of 168,000 gpm. The cooling towers would be designed with a drift elimination system to minimize the formation of PM10. In mechanical-draft cooling towers there is always a certain amount of water in the form of mist ("drift") containing dissolved solids that would exit through the cooling tower stacks. As the drift evaporates, the dissolved solids would form particulates, thereby adding to the PM10 emissions. Typically cooling towers are designed to maintain drift at 0.008% of the amount of circulating water flow. The Wallula Power Project incorporates drift elimination devices in the cooling towers, which would maintain drift at a level of 0.0005% of the amount of circulating water flow.

Cooling tower PM10 emissions were calculated based on the total dissolved solids in the circulating water and drift rate. EPA's AP-42 emission factors (EPA-CHIEF) as provided by the EPA Clearinghouse for Inventory and Emission Factors were used for developing a particulate emission factor for wet cooling towers. These guidelines state that "*a conservatively high* PM10 emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particulates are within the PM10 range." (Italics per EPA).

The features listed below, which are incorporated into the Wallula Power Project, represent the applicant's proposed BACT:

- combined cycle technology that provides energy conversion from natural gas to electricity with efficiencies that exceed 50%;
- dry low NOx combustion technology on the combustion gas turbines which limits NOx and CO emissions from the combustion gas turbines to 9.0 ppm;
- SCR technology incorporated into the HRSGs that further reduces total NOx emissions to a 2.5 parts per million volume dry (ppmvd) basis with ammonia slip of 5 ppm;
- oxidation catalyst controls incorporated into the HRSGs that reduce CO emissions to 2.0 ppmvd and volatile organic compounds (VOCs) to 5 ppmvd; and
- use of low-NOx burners for the auxiliary boiler.

With respect to PM10, the Wallula Power Project has adopted proposed LAER controls, as follows:

- natural gas firing of the combustion gas turbines and duct burners;
- combustion technology on the combustion gas turbines that limits particulate emissions to 20.8 lb/hr per turbine/HRSG set; and
- a drift elimination design on the cooling towers that reduces drift to 0.0005% of the amount of the circulating water flow, and use of a treatment system to reduce the dissolved solids in the cooling tower recirculation flow.

With respect to SO2, the applicant proposed BACT consisting of restricting fuel usage to natural gas supplied from a commercial pipeline. The SO2 emissions would be directly related to the sulfur content of the natural gas fuel. Based on sulfur measurements conducted by the Canadian natural gas suppliers, the applicant accounted for anticipated variations in sulfur content of the fuel. The modeled annual average sulfur content was 0.478 grains per 100 cubic feet, while the modeled short-term sulfur content was increased to 1.0 grains per 100 cubic feet to account for possible upsets at the upstream gas supply system in Canada.

The above BACT and LAER controls have been incorporated into the draft PSD and NOC permits that have been issued for public comment as part of the PSD/NOC review process, except for ammonia slip, which has been reduced to 5 ppm. Should the facility be approved by the Governor, the NOC permit appended to the Site Certification Agreement approved by the Governor would become final. The PSD permit would also require EPA approval.

Emission Rates

Emissions of Criteria Pollutants. The annual emissions for the combustion gas turbines were calculated based on a capacity factor of 100%, with 420 hours in startup mode. For some pollutants, turbine emissions vary based on ambient temperatures. Annual emissions have been calculated assuming an average ambient temperature of 54^{o}F. Combustion gas turbine operation without duct firing was assumed to occur for 3,960 hours per year, and combustion turbine operation with duct firing was assumed to occur for 4,380 hours per year. The auxiliary boiler was assumed to operate for a maximum of 4,000 hours per year. The emergency diesel generator and diesel fire pump were assumed to operate for a maximum of 200 and 100 hours per year, respectively. Cooling tower emissions were calculated from maximum total dissolved solids level and assuming 8,760 hours of operation per year. The proposed annual and hourly emissions for the Wallula Power Project are shown in Table 3.2-4. Note that the emission rates listed in Table 3.2-4 are based on emission limits specified in EFSEC's draft PSD permit. These emission limits are subject to change based on the public review process for the PSD permit.

Table 3.2-4. Wallula Power Project – Facility Criteria Pollutant Emissions Summary

Maximum Hourly Emissions (lb/hr)[a]	**NOx**	**CO**	**PM10**	**SO2**	**VOC**
Turbines and Duct Burners	92.9	45.2	83.2	17.9	64.6
Cooling Towers	-	-	3.7	-	-
Auxiliary Boiler	2.0	4.5	0.4	0.1	0.3
Emergency Diesel Generator[b]	12.7	7.4	0.6	0.4	0.8
Diesel Fire Pump[b]	-	-	-	-	-
Total Project (lb/hr)	107.6	57.1	87.9	18.4	65.7
Annual Emissions (ton/yr)[c]	**NOx**	**CO**	**PM10**	**SO2**	**VOC**
Turbines and Duct Burners	424.1	388.5	285.9	21.4	266.9
Cooling Towers	-	-	13.9	-	-
Auxiliary Boiler	3.1	7.0	0.6	0.3	0.5
Emergency Diesel Generator	3.2	0.7	0.1	0.1	0.08
Diesel Fire Pump	0.2	0.1	0	0	0.02
Total Project (ton/yr)	430.6	396.3	300.5	21.8	267.5

[a] Excludes startup emissions and assumes an ambient temperature of 11°C (52°F).
[b] Emergency diesel generator and diesel fire pump will not be tested on the same day.
[c] Includes startup emissions
Source: Wallula Generation (2001), PSD Fact Sheet (EFSEC 2002).

Toxic Air Pollutant Emission Rates. This section presents the emission factors and emission rates used in the analysis of toxic air pollutants. The Wallula Power Project has the potential to emit toxic air pollutants regulated by the Washington Department of Ecology. Formaldehyde, benzene, and other organic compounds associated with the combustion of fossil fuels would be released. In addition, post-combustion control with SCR results in ammonia emissions or "slip" that passes through the process unreacted. Ammonia is not a federal hazardous air pollutant, but it is identified as a Washington State Toxic Air Pollutant.

Emissions of toxic air pollutants would result from the combustion of natural gas in the combustion gas turbines, HRSG duct burners, and auxiliary boiler, as well as from the use of the emergency diesel generator and diesel fire pump. Toxic air pollutant emission rates from these sources were estimated using EPA AP-42 emission factors. Emissions were computed on both a short-term and annual average basis. For short-term emission rates, the hourly fuel use or heat input was used to estimate emissions on a pounds per hour basis. For the annual average emission rates (tons per year), total annual fuel use or heat inputs were computed and used with the emission factors in estimating the emissions. With the exception of ammonia and sulfuric acid mist, the toxic air pollutant emission factors are based on AP-42 data.

Ammonia emissions are based on a 5 ppmvd (at 15% oxygen) slip associated with the use of SCR for NOx control. Sulfuric acid mist emissions depend on the amount of sulfur in the fuel and amount of sulfur dioxide converted to sulfur trioxide. Based on engineering estimates, up to 5%

of the total sulfur in the fuel may be converted to sulfuric acid from the combustion gas turbine and HRSG duct burners.

The toxic air pollutants and their pollutant class, emission factors, and emission rates for the gas turbines, HRSG duct burners, the auxiliary boiler, the emergency diesel generator, and the diesel fire pump are listed in Table 3.2-5. The toxic air pollutant classes refer to Type A, for annual-averaged risk-based carcinogens; and Type B for noncarcinogens.

The Wallula Power Project would adopt BACT for toxics (T-BACT) for controlling toxic emissions pursuant to Chapter 173-460-040 WAC, including

- combustion gas turbine technology that is over 50% efficient that would minimize the amount of toxics formed relative to less efficient technologies;
- use of natural gas as the only fuel for the combustion gas turbines and HRSG duct burners which helps minimize formation of toxics; and
- use of oxidation catalyst unit on each HRSG duct burner that would reduce the emissions of certain volatile organic toxic compounds (e.g., formaldehyde).

Nonattainment Area Emission Offsets

The Wallula Power Project is located in a nonattainment area for one pollutant, PM10. This means that the Wallula Power Project is subject to Chapter 173-400-112 WAC, Requirements for New Sources in Nonattainment Areas; Chapter 173-400 131 WAC, Issuance of Emission Reduction Credits; and Chapter 173-400-136 WAC, The Use of Emission Reduction Credits.

The Wallula Power Project would generate particulates at a number of sources:

- particulates, mostly carbon, are produced when combustion gas turbines are fired;
- the HRSGs create a small amount of carbon particulates when duct firing occurs and a small amount of ammonium sulfate particulates in the SCR unit; and
- the two 9-cell cooling tower units would have some drift (small water droplets exiting the cooling towers) that would evaporate, causing the dissolved solids in the drift to form particulates.

Table 3.2-5 Wallula Power Project Toxic Air Pollutant Emissions Summary

Pollutant	Washington Toxic Air Pollutant Class[a]	Federal Hazardous Air Pollutant?	Total Project Emissions [b]		Chapter 173-460 WAC Small Quantity Emission Rates		Above Small Quantity Emission Rates?
			(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	
1,3-Butadiene	A	Yes	4.41E-03	31	-	0.5	Yes
2-Methylnapthalene	-	Yes	1.31E-06	0.00383	-	-	-
3-Methylchloranthrene	-	Yes	9.84E-08	0.00029	-	-	-
7,12 Dimethylbenz(a)anthracene	-	Yes	8.75E-08	0.00026	-	-	-
Acenaphthene	-	Yes	4.38E-05	0.00872	-	-	-
Acenaphthylene	-	Yes	9.10E-05	0.02	-	-	-
Acetaldehyde	A	Yes	8.24E-02	576	-	50	Yes
Acrolein	B	Yes	6.47E-02	461	0.02	175	Yes
Ammonia	B	No	137.4	764,408	2.0	17,500	Yes
Benzene	A	Yes	1.30E-01	865	-	20	Yes
Butane	B	No	6.56E-08	0.00019	5.0	43,748	No
Dichlorobenzene	A	Yes	6.56E-05	0.19	-	500	No
Ethylbenzene	B	Yes	3.22E-01	2,303	5.0	43,748	No
Fluoranthene	-	Yes	1.69E-04	0.021	-	-	-
Fluorene	-	Yes	1.73E-04	0.03	-	-	-
Formaldehyde	A	Yes	1.44E+00	10,230	-	20	Yes
Hexane	B	Yes	9.84E-02	287	2.6	22,750	No
Naphthalene	B	Yes	1.44E-02	94	2.6	22,750	No
PAHs							
Benzo(a)anthracene	A	Yes	3.59E-05	7.09E-03	-	-	No
Benzo(b)fluoranthene	A	Yes	9.95E-06	2.24E-03	-	-	No
Benzo(k)fluoranthene	A	Yes	2.32E-06	6.99E-04	-	-	No
Benzo(a)pyrene	A	Yes	2.70E-06	6.78E-04	0	0	Yes
Benzo(g,h,i)perylene	A	Yes	5.93E-06	1.26E-03	-	-	No
Chysene	A	Yes	1.41E-05	3.02E-03	-	-	No
Dibenzo(a,h)anthracene	A	Yes	4.30E-06	9.16E-04	-	-	No
Indeno(1,2,3-cd)pyrene	A	Yes	4.49E-06	1.09E-03	-	-	No
Total PAHs	A	Yes	2.22E-02	158	0	0	Yes
Pentane	B	No	1.42E-01	415	5	43,748	No
Propylene Oxide	A	Yes	2.92E-01	2,087	-	50	Yes
Sulfuric Acid	B	Yes	7.64E+00	37,360	0.02	175	Yes
Toluene	B	Yes	1.33E+00	9,357	5	43,748	No
Xylenes	B	Yes	6.47E-01	4,606	5	43,748	No

[a] The toxic air pollutant classes refer to Type A, for annual-averaged risk-based carcinogens; and Type B for noncarcinogens.
[b] Exponent notation is used to show quantities less than 1. For example, 4.41E-03 indicates 4.41 x 10^{-3} or 0.00441.
Source: Wallula Generation (2001).

Table 3.2-6 shows the total estimated annual emissions for PM10.

Table 3.2-6. Annual PM10 Emissions

Source	Tons/yr
Four Combustion Gas Turbines and Duct Burners	285.9
Cooling Towers	16.2
Other Equipment	0.7
Total	302.8
Source: Wallula Generation (2001).	

Over 95% of the PM10 emissions in the Wallula nonattainment area are from windblown dust due to agricultural operations. Reductions in these emissions are proposed as the source of emission reduction credits (ERCs) that are required by federal and state regulation to offset pollutants from major new sources in nonattainment areas. For PM10 the ratio of actual emissions from the Wallula Power Project (tons per year) to the applicant's proposed ERCs (tons per year) is one to one.

As LAER to offset the production of 303 tons per year of particulates, the applicant originally proposed to purchase or lease up to 1,300 acres of active farmland and convert it to cultivated dryland grasses or dryland grasses and shrubs. Based upon the qualified acreage of active farmland currently available in the market for lease or purchase, the applicant has options on sufficient agricultural land to generate the necessary offsets for PM10.

As part of the air quality impact analysis for short-term (24-hour average) PM10 impacts, the offsetting effects of retiring 175 acres of land at the project site (which is currently subject to particulate emissions from wind erosion during farming activity) was assessed. The current fugitive dust emissions of PM10 from the site are 60.3 tons per year. After the Wallula Power Project goes into commercial operation, the PM10 emissions from this area would be 10.2 tons per year, or a reduction of 50.1 tons per year of PM10. Thus, the total required additional PM10 offsets from off-site sources are 252.7 tons per year to reach the 302.8 tons of offset shown in Table 3.2-6.

The applicant now proposes to retire most agricultural operations at the 645-acre Wake property located on the west side of the Columbia River roughly 7 miles southwest of the power plant site (see Figure 1-1 in Chapter 1). The current wheat growing operations there would be converted to cultivated dry grass operations or would be retired to shrub-steppe. Current PM10 emissions from the Wake property are estimated at 552 tons per year, and the proposed changes would reduce the emissions to 36 tons per year, for a reduction of 516 tons per year. The overall PM10 reductions achieved by retiring agricultural operations at the power plant site and the Wake property would be 566 tons per year, which would more than offset the 303 tons per year of emissions from the proposed future power plant operations. EFSEC has issued preliminary concurrence with this revised proposal through issuance of a draft NOC permit for public comment.

The use of the agricultural offset emission sources would decrease the Wallula Power Project's ambient PM10 impacts to less than the significance levels. Thus, the offsets would ensure that the project would not have any significant impact on the nonattainment area.

Local Air Quality Impact Assessment

The assessment of impacts on local and regional ambient air quality from the proposed facility was conducted using EPA-approved air quality dispersion models. These models are based on fundamental mathematical descriptions of atmospheric processes in which a pollutant source can be related to a receptor area. The assessment of local impacts from the Wallula Power Project covered an area with a radius of approximately 15 kilometers (9.3 miles) from the project site. It evaluated compliance with state and federal ambient air quality standards; significant impact levels; Class II area increments for NO2 and SO2; and PM10 impacts on the Wallula PM10 nonattainment area. The regional impact assessment evaluated potential impacts to Class I areas within about 200 kilometers (124.3 miles) of the project site including impacts on visibility, Class I increments for NO2, SO2, and PM10, and impacts to soil and vegetation from deposition of nitrogen and sulfur compounds.

The Industrial Source Complex Short-Term Model ISCST3 (EPA SCRAM) was used except when assessing impacts in complex terrain to the southwest of the project site. In the latter case, the Complex Terrain Screening Model CTSCREEN (EPA SCRAM) was adopted. Both models are EPA-approved air quality dispersion models.

The modeling analysis revealed that the project PM10 emissions would not result in a significant impact within the PM10 nonattainment area. Therefore, the project would not significantly affect the ambient air quality of the area, nor have a significant effect on the 3-hour or 24-hour SO2 Class II increments or the 24-hour PM10 Class II increment outside the PM10 nonattainment area. Table 3.2-7 compares maximum concentrations to the PSD Significant Impact Level (SIL) and Ambient Air Quality Standards.

Table 3.2-7. Maximum Modeled Short-Term Criteria Pollutant Concentrations

Pollutant	Averaging Period	Ambient Air Quality Standard (µg/m^3)	Significant Impact Level (µg/m^3)	Maximum Concentration (µg/m^3)
PM10	24-Hour	150	5	4.70
SO2	1-Hour	1,050	-	31.1
	3-Hour	1,300	25	7.4
	24-Hour	262	5	1.1
CO	1-Hour	40,000	2000	426
	8-Hour	10,000	500	112

Table 3.2-8 shows the results of the long-term criteria pollutant modeling. The maximum long-term (annual average) ground-level concentrations for criteria pollutants (NO2, SO2, and PM10) were modeled using the ISCST3 model and the CTSCREEN model.

Table 3.2-8. Maximum Modeled Annual Average Criteria Pollutant Concentrations

Pollutant	Averaging Period	Ambient Air Quality Standard (µg/m^3)	Significant Impact Level (µg/m^3)	Maximum Concentration (µg/m^3)
NO2	Annual	100	1	0.79
PM10	Annual	50	1	0.94
SO2	Annual	80	1	0.07

PSD Class II Increment Consumption Analysis. Maximum modeled concentrations of SO2, NO2, and PM10 are below the SILs. Proposed project generation of these pollutants has an insignificant impact on Class II increments, so further analysis is not required. The project would comply with the PSD Class II increment limits.

Toxic Air Pollutant Analysis. Air quality dispersion modeling was used to assess compliance with the State's toxic air pollutant regulations (Chapter 173-460 WAC). Those toxic air pollutants that are emitted in quantities above the "small quantity emission rate" require calculation of potential impacts that are then compared with the Acceptable Source Impact Levels (ASILs) to assess compliance. Ten compounds were identified as being emitted in amounts greater than the small quantity emission rate and required modeling. Depending on the compound, either the 24-hour or annual average concentrations were used for comparison with the ASILs.

The maximum modeled 24-hour and annual average toxic air pollutant concentrations resulting from the Wallula Power Plant emissions are compared to the appropriate ASILs in Table 3.2-9. For all toxic air pollutants evaluated the maximum modeled concentrations are less than the ASILs. Maximum short-term sulfuric acid mist concentrations are also below the 24-hour ASIL. Based on these modeling results, the Wallula Power Project is not expected to create any significant impacts due to its toxic air pollutant emissions.

Secondary Ammonium Nitrate Aerosol Formation. The power plant would emit up to 382 tons per year of ammonia gas, which could theoretically react in the atmosphere to form secondary ammonium nitrate particles many miles downwind of the plant. In theory, 1 ton of ammonia emissions could react to form 4.6 tons of ammonium nitrate particles. However, the chemical fate of ammonia emissions from the plant is not well understood, and it is uncertain what fraction of the ammonia would actually react to form ammonium nitrate. Recent studies in the agricultural regions of California show that a relatively small fraction of ammonia gas emitted from agricultural operations reacts to form ammonium nitrate (Kumar and Pandis 1998). However, the phenomena contributing to ammonium nitrate formation are too complex to allow simple comparison between the California studies and the proposed Wallula project.

Table 3.2-9. Maximum Modeled Toxic Air Pollutant Concentrations

Pollutant	Washington Toxic Air Pollutant Class	Modeled Averaging Period	Modeled[a] Concentration ($\mu g/m^3$)	ASIL ($\mu g/m^3$)	Concentration Less Than ASIL?
1,3-Butadiene	A	Annual	0.00005	0.0036	Yes
Acetaldehyde	A	Annual	0.000085	0.45	Yes
Acrolein	B	24-Hour	0.0071	0.02	Yes
Ammonia	B	24-Hour	15.1[b]	100	Yes
Benzene	A	Annual	0.0013	0.12	Yes
Benzo(a)pyrene	A	Annual	-[c]	0.00048	Yes
Formaldehyde	A	Annual	0.015	0.077	Yes
Total PAHs	A	Annual	0.00023	0.00048	Yes
Propylene Oxide	A	Annual	0.0031	0.27	Yes
Sulfuric Acid	B	24-hour	0.84	3.3	Yes

[a] Concentrations modeled using ISCST3 model.
[b] Ammonia emissions based on 5 ppm slip.
[c] Benzo(a)pyrene concentration is included in the Total PAH modeled concentration.
Source: Wallula Generation (2001).

Regional Air Quality Impact Assessment

PSD regulations require an assessment of the project's impact on Air Quality Related Values (AQRV) in Class I areas. AQRVs include regional visibility or haze; the effects of primary and secondary pollutants on sensitive plants; the effects of pollutant deposition on soils and water bodies; and effects associated with secondary aerosol formation. These requirements provide special protection for Class I areas. The federal land managers for Class I areas include the National Park Service and U.S. Forest Service.

The Eagle Cap Wilderness, the closest Class I area to the project, is 115 kilometers (71.5 miles) southeast of the project site. Additional Class I areas included in the modeling were Mt. Rainier National Park, Glacier Peak Wilderness, Alpine Lakes Wilderness, Goat Rocks Wilderness, Mt. Adams Wilderness, Mt. Hood Wilderness, Strawberry Mountain Wilderness, and the Spokane Indian Reservation. The Columbia River Gorge National Scenic Area was also included to recognize its importance as an environmental, recreational and cultural area, even though it is not afforded special protection under the Clean Air Act. Additional sensitive areas that could be impacted, but were not included in the modeling, are three wilderness study areas administered by the Bureau of Land Management in the Hells Canyon region of northeastern Oregon.

Class I Area Increment Consumption. The EPA-approved CALPUFF modeling system was used for the regional air quality impact assessment. The effect of emissions from the facility on Class I area increment consumption was assessed by comparing predicted pollutant concentrations to Class I modeling significance levels proposed by the EPA (Federal Register, Vol. 61, No. 142, page 38292). Concentration predictions were obtained for SO2, NOx, and PM10 using the CALPUFF modeling system. Predictions were made within the Columbia River Gorge National Scenic Area to provide information to the federal land managers for this Class II area of interest.

Table 3.2-10 lists EPA's proposed SILs for Class I areas. When predicted concentrations are less than the Class I area SILs, it indicates there is little potential that the proposed project could cause ambient concentrations to exceed either the NAAQS or the PSD increments, and a comprehensive Class I increment analysis is not required for a given pollutant. This does not necessarily indicate that the project would not cause any significant air quality impact, because concentrations below the SILs could still cause AQRV impacts related to acid deposition and regional haze. AQRV assessments are described in the next section.

As shown in Table 3.2-10, the modeled CALPUFF ambient concentrations at the CRGNSA and Class I areas are several orders of magnitude less than the EPA's proposed criteria, and also are well below the criteria recommended by the federal land managers. While these are not adopted regulatory criteria, they are used here to provide a measure of assurance that the Wallula Power Project's contributions predicted by the model would not contribute to concentrations exceeding the NAAQS standards or PSD increments.

Table 3.2-10. Results of Class I Increment Analysis

Class I Area	Maximum Concentration Predictions (ì g/m^3)					
	NO2	SO2			PM10	
	Annual	Annual	24-hr	3-hr	Annual	24-hr
Mt. Rainier National Park	0.00003	0.00002	0.00047	0.00212	0.00047	0.01310
Goat Rocks Wilderness	0.00005	0.00003	0.00067	0.00236	0.00069	0.02474
Mt Adams Wilderness	0.00008	0.00003	0.00115	0.00365	0.00087	0.03553
Mt Hood Wilderness	0.00020	0.00006	0.00227	0.00683	0.00147	0.05393
Alpine Lakes Wilderness	0.00016	0.00004	0.00133	0.00635	0.00078	0.02828
Glacier Peak Wilderness	0.00007	0.00002	0.00053	0.00273	0.00042	0.01242
Eagle Cap Wilderness	0.00043	0.00008	0.00445	0.01044	0.00158	0.07251
Hells Canyon Wilderness	0.00034	0.00008	0.00147	0.00636	0.00136	0.01929
Strawberry Mtn. Wilderness	0.00003	0.00002	0.00071	0.00361	0.00041	0.01614
Spokane Indian Reservation	0.00132	0.00021	0.00435	0.01655	0.00351	0.05574
EPA Proposed Class I SIL	0.10	0.10	0.20	1.00	0.20	0.30
FLM Proposed Class I SIL	0.03	0.03	0.07	0.48	0.08	0.27
Class II Area of Interest						
CRGNSA	0.00051	0.00012	0.00433	0.01356	0.00287	0.11185
EPA Class II Significance Level	1.0	1.0	5.0	25.0	1.0	5.0

Notes:
All NOx conservatively assumed to be converted to NO2.
PM10 concentrations include sulfates and nitrates.
Emissions based on continuous operation with supplemental duct firing and auxiliary boiler.
EPA and FLM proposed Class I area Significant Impact Levels from the Federal Register, Vol. 61, No. 142, page 38292.

Pollutant Concentrations Effects on Plants. The federal land managers have the responsibility of ensuring AQRVs in the Class I areas are not adversely affected, regardless of whether the Class I increments are maintained. In order to protect plant species, the U.S. Forest Service recommends that maximum SO2 concentrations not exceed 40 to 50 parts per billion (ppb) (105 to 130 μg/m^3), and annual SO2 concentrations should not exceed 8 to 12 ppb (21 to 31 μg/m^3). Lichens and bryophytes are found in the subalpine and alpine regions of several of the Class I areas. Some of these species may be sensitive to SO2 concentrations in the range of 5 to 15 ppb (13 to 39 μg/m^3). The Forest Service also indicates that no significant injury to plant species in the Pacific Northwest is expected for annual NO2 concentrations less than 15 ppb (28 μg/m^3).

The 24-hour maximum and annual results displayed in Table 3.2-10 are several orders of magnitude less than Forest Service criteria established to protect vegetation in Pacific Northwest Class I areas. While the cumulative effects of other existing sources were not considered in this analysis, the magnitude of the predictions from the Wallula Power Project are insignificant and are not expected to cause or contribute to the injury of plant species within the Class I areas.

Nitrogen and Sulfur Deposition at Class I Areas. The CALPUFF modeling system was used to estimate the Wallula Power Project's potential contribution to total nitrogen and sulfur deposition in the Class I areas. Soils, vegetation, and aquatic resources in Class I areas are potentially influenced by nitrogen and sulfur deposition. For several Pacific Northwest Class I areas, the background deposition of nitrogen and sulfur is already above federal land manager levels of concern.

Maximum annual deposition fluxes predicted by the CALPUFF modeling system are presented in Table 3.2-11. The highest predicted deposition fluxes are in the Spokane Indian Reservation and the Eagle Cap and Hells Canyon Wilderness Areas. However, the deposition fluxes predicted are more than a thousand times lower than the Forest Service criteria and many times less than estimated existing deposition fluxes. For PSD review of proposed power plants within Washington, the Washington Department of Ecology suggests 0.01 kilogram per hectare per year (kg/ha/yr) and 0.006 kg/ha/yr as significance criteria for nitrogen and sulfur deposition, respectively. Predicted deposition fluxes are much lower than Ecology's suggested criteria for all areas of interest in the study.

Note however, the assessment of additional acid deposition must consider recent studies confirming existing ecological impacts related to sulfur and nitrogen deposition along the eastern Cascade range, particularly in the Columbia Gorge west of Hood River (Geiser and Bachman 2002). As described in Section 3.2.1 studies have revealed measurable shifts in the distribution of sensitive lichen species, presumably related to current levels of acid deposition caused by existing air pollutant sources east of the Cascades. In that context, it is uncertain whether relatively small increases in acid deposition caused by the Wallula plant's emissions could exacerbate the existing adverse impacts.

Table 3.2-11. CALPUFF Annual Deposition Analysis Results (Total Annual Wet Plus Dry Deposition)

	Nitrogen Deposition (kg/ha/yr)				Sulfur Deposition (kg/ha/yr)			
Class I Area	**Project**	**Back ground**	**Total**	**Change**	**Project**	**Back ground**	**Total**	**Change**
Mt. Rainier National Park	0.00009	2.4	2.40009	0.0036 %	0.00003	3.1	3.10003	0.0008 %
Goat Rocks Wilderness	0.00011	9.0	9.00011	0.0012 %	0.00003	11.8	11.80003	0.0003 %
Mt. Adams Wilderness	0.00014	9.0	9.00014	0.0015 %	0.00004	10.8	10.80004	0.0004 %
Mt. Hood Wilderness	0.00023	5.4	5.40023	0.0043 %	0.00007	8.6	8.60007	0.0009 %
Alpine Lakes Wilderness	0.00032	5.2	5.20032	0.0062 %	0.00009	7.2	7.20009	0.0012 %
Glacier Peak Wilderness	0.00020	5.8	5.80020	0.0034 %	0.00005	8.0	8.00005	0.0007 %
Eagle Cap Wilderness	0.00042	1.6	1.60042	0.0260 %	0.00012	1.6	1.60012	0.0078 %
Hells Canyon Wilderness	0.00042	1.2	1.20042	0.0351 %	0.00013	1.4	1.40004	0.0093 %
Strawberry Mtn. Wilderness	0.00010	1.2	1.20010	0.0085 %	0.00004	1.4	1.40002	0.0026 %
Spokane Indian Reservation	0.00108	10.0	10.00108	0.0108 %	0.00034	12.0	12.00034	0.0029 %
USFS Level of Concern			5.0				3.0	
Ecology Significance Level	0.01000				0.06000			
Class II Area of Interest								
CRGNSA	0.00037	10.0	10.00037	0.0037 %	0.00012	12.0	12.00012	0.0010 %

Notes:
Emissions are based on continuous 100 % load operation with supplemental duct firing and auxiliary boiler.
Nitrogen deposition includes ammonium ion.

Regional Haze Assessment. PSD regulations require the applicant to model the increase in the light extinction coefficient (b_{ext} [a measure of visibility]) at Class I areas and other areas designated as sensitive by the federal land managers. The applicant modeled the impacts at nine Class I areas, the Columbia River Gorge National Scenic Area, and the Spokane Indian Reservation. The CALPUFF regional haze analysis results calculate the maximum predicted change in 24-hour extinction coefficient. Changes to extinction are based on seasonal background data for good visibility days and are adjusted with hourly humidity. The extinction budgets for the higher episodes in most Class I areas are influenced by nitrates, PM10, and sulfates (to a lesser extent).

Regional haze is usually quantified using two related indicators. The “visual range” is the distance at which a dark mountain is just perceptible against the sky. The visual range decreases if the air is polluted. The “light extinction coefficient” (b_{ext}) has units of Mm^{-1} and is another indicator to quantify how pollutants in the atmosphere reduce visual range. Increased b_{ext} results in reduced visual range. For example b_{ext} coefficients of 18.1 Mm^{-1} and 20 Mm^{-1} correspond to visual ranges of 216 km and 196 km, respectively. If the background b_{ext} is 18.1 Mm^{-1}, then an increase of 1.9 Mm^{-1} (caused by emissions from a new source) would decrease the visual range by about 10%.

Criteria for defining a significant impact to regional visibility resulting from emissions from new air pollutant sources are described in recent federal guidelines published by the Federal Land Managers’ Air Quality Related Values Workgroup (FLAG) in its Phase One Report, published by the U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service in December 2001. According to the federal land mangers (FLMs) responsible for protecting air quality in the Class I areas, a 5% change in extinction can be used to indicate a “just perceptible” change to a landscape and a 10% change in extinction coefficient from the “natural” background is considered a significant incremental impact. Restoration of “natural background” visibility is the long-range goal of existing federal regulations (EPA’s Regional Haze Rule) as well as the FLMs. “Natural background” b_{ext} coefficients for each Class I area in the Pacific Northwest are listed in the FLAG guidance document.

A more stringent definition of a significant cumulative visibility impact applies in cases where a new air pollutant source would impact an area that already experiences significant visibility impairment (i.e., existing manmade extinction coefficients already more than 10% higher than natural background values). In that case, the new source would be determined to cause a significant visibility impact if the new source (by itself) caused an increase in extinction more than 0.4% compared to natural background. The FLAG guidance does not clearly specify what level of documentation is required to indicate existing visibility is already impacted. As described in Section 3.2.1 the Forest Service recently submitted reports citing monitoring data indicating regional visibility near the Wallula site is already impacted (U.S. Forest Service 2002; Geiser and Bachman 2002).

However, a recent ruling by EPA Region 10 regarding the proposed Wanapa Energy Center project in Oregon clarified that, for regulatory purposes to comply with PSD permitting requirements, the 0.4% criterion applies only in a narrow context (EPA 2002). EPA ruled that it should be applied only in cases where regional-scale modeling of all “increment consuming sources” has been conducted to demonstrate that the existing extinction exceeds 10% above natural background. As described in Section 3.17, Bonneville recently conducted regional visibility modeling accounting for some of the region’s emissions (Bonneville 2001a, 2001b, 2001c). Those studies concluded that cumulative visibility at regional Class I areas would likely be impacted by more than 10% above background under some meteorological conditions. However, in the case of the Wanapa Energy Center project EPA ruled that Bonneville's regional modeling study did not satisfy the definition of an adequate cumulative impact assessment, and therefore the "0.4% above background" visibility impact criterion is not currently applicable to future projects undergoing PSD review. Based on EPA's ruling it is assumed that the "0.4% above background" is not applicable for the Wallula project.

Assumed Year 2001 background b_{ext} values represent visibility on the clearest 5% of the days in the Class I/Scenic/Wilderness Areas and the best 20% of days in the CRGNSA and the Spokane Indian Reservation. These Year 2001 background values were based on measured data provided by the U.S. Forest Service. The assumed background coefficients are similar to, and in some cases lower than, the natural background b_{ext} values published by the FLMs (FLAG 2000). Therefore, the regional haze modeling provided a reasonably conservative assessment in accordance with the FLAG guidance. Background ozone and ammonia concentrations, nitrogen deposition, and sulfur deposition data were based on generally conservative assumptions.

Table 3.2-12 lists the modeling results for the sensitive areas that were modeled to experience the highest increase in b_{ext}. The modeled changes to extinction are less than the 5% criterion suggested by the federal land managers and Washington Department of Ecology for all seasons and Class I areas. According to this criterion, changes to visual conditions in the Class I areas would not be perceptible even when the Wallula Power Project's combustion gas turbines, HRSG duct-burners, and auxiliary boiler are emitting at their short-term peak rates.

Table 3.2-12. Modeled Regional Haze Impacts

Protected Area	Extinction Coefficient B_{ext} (1/Mm)			Highest 24-hour Increase in b_{ext}
	Project	Background	Total	
Columbia River Gorge National Scenic Area (Class II)	1.37	41.8	43.2	3.27%
Mt. Hood Wilderness (Class I)	0.77	23.7	24.4	3.25%
Mt. Rainier National Park	0.107	16.83	16.64	0.63%

Notes:
Emissions based on continuous operation with supplemental duct firing and auxiliary boiler.
Background extinction coefficients derived from aerosol data on days with best visibility: top 20th percentile at Columbia River Gorge National Scenic Area, and top 5th percentile for Class I areas.
Significant impact is defined as a 5% increase in the modeled $b_{ext.}$
Mm = megameters
Source: Wallula Generation (2001).

Odors

The project would be located in an area where several sources of odor already exist (e.g., Iowa Beef Processors slaughterhouse, J.R. Simplot Company cattle feedlot, Ponderosa Fibers deinking plant, and Wallula Mill). The project would not contribute to these odors during normal operation. Natural gas delivered to the Wallula Power Project may be odorized, but it would be contained within the natural gas pipeline and power plant piping system up to the point of use in the combustion gas turbines, HRSGs, and the auxiliary boiler where it would be combusted. There would be a gas metering building that would contain equipment for natural gas pressure reduction. This enclosed structure would contain natural gas detection systems to identify leaks.

Other detection equipment would be located in other areas of the plant where natural gas leaks can collect so the power plant operators can contain and vent the gas.

Ammonia used in the SCR system for NOx control is the only other potential source of odor. Trace amounts of ammonia emitted from the combustion turbine stacks would disperse to well below odor thresholds before the plume reached the ground. Otherwise, ammonia odor would not be detected unless it was spilled.

Cooling Tower Plumes

Downwind impacts caused by water vapor and water droplets emitted from the cooling towers were modeled by the applicant using the Seasonal/Annual Cooling Tower Impact Program (SACTIP) computer model. SACTIP calculated the occurrence of elevated visible plumes water and salt deposition, ground-level fogging, and icing. The model simulated downwind dispersion of the steam plumes based on wind data from the local meteorological station and relative humidity data from Pasco, Washington.

The key issue associated with the cooling tower plumes is their potential impact on local climate at the nearest agricultural parcels directly north and northeast of the plant site. Those two parcels are used to grow alfalfa, hay, and fruit orchards. There is concern that the cooling tower plumes could shade those parcels or increase relative humidity enough to retard growth of the crop or drying of the crop after it is harvested. However, as described in the following sections, the SACTIP model indicated that the cooling tower plumes would have no significant impact beyond the power plant facility boundary.

Emissions of Water Droplets and Water Vapor. The power plant would emit water vapor and water droplets from the cooling system, combustion turbine exhaust, and wastewater operations. The applicant estimated water emissions to the atmosphere as follows:

- Water vapor from cooling towers 4.4 mgd (3,055 gpm)
- Water vapor from combustion turbine stacks 2.4 mgd (1,666 gpm)
- Water vapor from wastewater evaporation ponds 0.1 mgd (69 gpm)
- Water droplets from cooling towers 0.0005 mgd (3 gpm)

Water vapor emitted in the hot exhaust gas from the tall combustion turbine stacks would rapidly disperse before the plume reached ground several miles from the plant, so water emissions from those stacks would cause no significant impacts. However, the downwind impact caused by 4.4 mgd of water vapor emitted from the cooling towers was evaluated using the SACTIP model.

Cooling Tower Steam Plume Visibility. The potential visibility of a cooling tower plume in the area of the Wallula Power Project was evaluated. A visible overhead plume at the cherry orchards could shade the trees during important growing conditions. After excluding those hours in which the plume would be obscured by darkness and bad weather, a map was developed (Figure 3.2-1). It shows that a visible plume would extend into cherry orchards north of Dodd Road to the north for a period of less than 150 hours per year. Visible plume contours to the west, east, and south are less extended and occur for a shorter period of time.

The SACTIP model indicated that the elevated visible plumes shown in Figure 3.2-1 would seldom occur during daytime during the spring and summer growing season. Visible steam plumes extending beyond the power plant facility boundary would not occur when the relative humidity was less than 70%. The average relative humidity during spring and summer is 41%, and it is unlikely that humidity levels during those seasons would exceed 70% for extended periods other than at night. Therefore, it is unlikely that visible steam plumes would extend over nearby agricultural parcels in daylight hours during the growing season.

Cooling Tower Steam Plume Fogging and Icing. The results of an analysis concerning potential fogging are summarized in Figure 3.2-2, which presents contours lines on a map showing the extent and number of hours in which fogging may be a potential impact to the local area. Based upon the contours it can generally be concluded that

- plume induced ground level fog would occur for less than 1 hour per year on U.S. Highway 12 and the county access road running through the project site; and
- plume induced ground level fog would occur infrequently (for approximately 4 to 5 hours per year) on Dodd Road.

In cold weather, a cooling tower plume would typically persist until the air exiting the cooling tower sufficiently mixes with the surrounding cooler, drier air. If the plume returns to ground level prior to dissipating, it can cause localized fogging or icing of downwind structures and roadways. In order for roadway icing to occur, the cooling tower plume needs to touch down on the road surface, the plume must become condensed, and the temperature of the road surface must be below freezing. The SACTIP model was used to assess icing of the area surrounding the project site, including local roadways (U.S. Highway 12, the county access road running through the project site, and Dodd Road) due to the project's cooling tower plumes. Three years of local meteorological data from the Boise Cascade Corporation Wallula Mill meteorological monitoring station and City of Pasco Airport were used with the SACTIP model for this analysis. For the 3-year period analyzed, icing was not projected to occur.

While the conditions for icing did not occur during the 3-year period evaluated with the cooling tower plume model, the potential for icing on the local roads still exists. Under meteorological conditions of moderate to high winds in the direction of the roadways, low dew-point depression, and low temperatures (below freezing) icing could occur. However, due to the infrequent occurrence of these conditions, if icing were to occur it would be of short duration.

Cooling Tower Plume Droplet Deposition. Local farmers have expressed concern that water droplets emitted from the cooling towers could settle onto nearby agricultural land and possibly retard drying of harvested alfalfa. The SACTIP model indicated this is unlikely to occur. The model predicted that the average monthly deposition of water droplets onto the nearest agricultural parcels within 0.25 mile of the plant boundary would be equivalent to only 0.0005 inch per month of rainfall. This additional water deposition would be insignificant compared to the normal rainfall during the summer and autumn months (0.5 to 1.0 inch per month).

Increase in Relative Humidity. Local farmers have expressed concern that water vapor emitted by the cooling towers could increase local humidity during the late growing season and retard drying of harvested alfalfa and hay at nearby agricultural parcels. This is unlikely because the amount of water vapor emitted by the cooling towers is only a small fraction of the naturally occurring water vapor that blows past the plant site. The cooling towers would emit 4.4 mgd of water vapor. However, on an average summertime day, an estimated 96 mgd of naturally occurring water vapor blows past the site (based on an average summertime relative humidity of 36%, average temperature of 56°, and average wind speed of 9.8 miles per hour). The cooling towers would add approximately 5% of the naturally occurring humidity, so it is unlikely that the additional water vapor would increase regional humidity. The minor increase in humidity would be unlikely to affect growing and drying of hay and alfalfa.

Cooling Tower Steam Plume Salt Deposition. As the droplets of moisture in the plume evaporate, particulates form which would be deposited on areas adjacent to the Wallula Power Project. These particulates represent salts that naturally occur in the groundwater that would be used to make up the cooling tower's water circulating system.

In general, the quantity of the total dissolved solids, rather than specific chemical composition, determines the impact from deposition onto plants. Field studies of agricultural crops in a dry climate have shown that when cooling tower salts are applied at deposition rates of 3 to 4 kilograms per hectare per month (kg/ha/mo) to sensitive species such as corn, significant (10%) reduction in yield may occur. However, natural vegetation is generally more resistant than crop plants to damage from salt deposition.

Figure 3.2-3 shows the rate at which the particulates from the cooling tower would be deposited in the local area. Over 99% of the particulates would be deposited within 100 meters of the cooling towers. The cooling towers would be located adjacent to the J.R. Simplot Company feedlot where the prevailing winds would carry the drift if it extends off-site. Drift falling on the bare feedlot ground would not impact plant life.

Deposition rates modeled for the proposed cooling towers projected a maximum total salt deposition of 1,427 kg/ha/mo at a distance of 50 meters from the wet mechanical-draft cooling towers. This places the maximum deposition within the facility boundaries and approximately 180 meters inside the closest property fence line. Deposition rapidly falls off at distances of 100 meters or more from the cooling towers.

The modeling showed that salt deposition rates at the agricultural parcels south of Dodd Road would be less than the impact thresholds. The modeled salt deposition rate at the nearest alfalfa field due north of the plant (300 to 1,200 meters from the cooling towers) averaged 0.5 kg/ha/mo. The modeled salt deposition rate at cherry orchards north and northwest of the plant (500 to 1,500 meters from the cooling towers) averaged between 0.05 and 0.15 kg/ha/mo. These modeled deposition rates are less than the threshold rates of 3 to 4 kg/ha/mo believed to affect agricultural plants (including cherry orchards), and it is concluded that the cooling towers would not adversely affect the nearest agricultural parcels.

The modeled salt deposition rates at the nearest alfalfa field and orchard north of Dodd Road (1,200 to 2,000 meters from the cooling towers) averaged less than 0.05 kg/ha/mo. These modeled deposition rates are less than the threshold rates of 3 to 4 kg/ha/mo known to affect agricultural plants.

Deposition rates along the adjacent J.R. Simplot Company feedlot property line would range from 1.15 to 0.5 kg/ha/mo. Deposition rates within the J.R. Simplot Company feedlot area would decrease rapidly from these levels and are not expected to be significant (see Figure 3.2-3).

Analysis of Potential Impacts to Local Cherry Orchards

The applicant conducted additional analyses to investigate the potential impacts to the Dodd Road cherry orchards resulting from changes in temperature, moisture, and shadowing from the power plant plumes (Wallula Generation 2002). The results of these additional analyses indicate that the potential impacts from the Wallula Power Project are insignificant and would not adversely impact the cherry orchard operations. The locations of the cherry orchards discussed below can be found on Figures 3.2-1, 3.2-2, and 3.2-3.

Potential Temperature Effects on Cherry Orchards. The Wallula Power Project would emit warm gases from the HRSG stacks and warm moist air from the cooling tower stacks during its normal operation. An analysis was performed to determine if these sources would have any significant impact on ambient temperatures, which in turn could affect the budding season of the cherry orchards near the project site. The cherry orchards are located about 1,200 meters to 1,800 meters north by northeast from the center of the cooling tower stacks.

The heat emitted by the power plant stacks and the cooling towers would have little effect on ambient air temperature during the critical cherry budding season from January through April. To calculate the impact on budding, potential effects on the maximum daily temperatures which determine the number of Heat Units were calculated. Heat Units is a term used by the Tree Fruit Research & Extension Center of Washington State University. Heat Units for cherry growing are defined as the equivalent to the number of degrees Fahrenheit by which the actual maximum temperature exceeds 43^{o}F in any one day. The study concluded that there were 10 days over a 4-month period (January 1 through April 30, 1999) when the maximum daily temperature exceeded 43^{o}F by more than 0.01^{o}F.

The projected cumulative seasonal Heat Units caused by the power plant emissions (i.e., the sum of the individual daily Heat Units) would be less than 1.9 over the cherry budding period from January through April. Cherry orchards near Wallula normally experience between 774 and 1,228 Heat Units during the normal growing season, so the increase of 1.9 Heat Units resulting from the power plant emissions would be insignificant. This potential increase in Heat Units caused by the Wallula Power Project's emissions would not likely advance the budding season by even a single day and therefore there would be no significant impact to the budding conditions at the cherry orchards.

Potential Moisture Effects on Nearby Cherry Orchard. An evaluation was conducted to assess potential moisture effects of the cooling tower plume on the cherry orchards. In order for moisture effects to be significant there has to be free moisture on the fruit over a period of time, on the order of several days. The most sensitive period is during the pink fruit stage, which usually occurs for less than a month and generally in June. The SACTIP cooling tower plume model was run using meteorological data for June 1997, 1998, and 1999. Normal rainfall for the month of June at the Pasco Airport is 0.51 inches. The model predicted an additional 0.0002 inches per month of droplet deposition caused by the cooling tower emissions. The 0.0002 inches per month that was modeled equates to an approximately 0.0392% increase in potential moisture due to the cooling tower operation. This amount of moisture is insignificant and therefore moisture from the Wallula Power Project cooling tower plumes would not cause cracking of the cherries in the nearby cherry orchards.

[insert figure 3.2-1]

[insert figure 3.2-2]

[insert figure 3.2-3]

Potential Plume Shadowing Effects on Nearby Orchard. The SACTIP cooling tower plume model was used to identify how often plume shadowing would occur during the growing season. For this analysis the growing season was assumed to be from May through September, and meteorological data for the years 1997, 1998 and 1999 were modeled. In the vicinity of the Dodd Road cherry orchards the total number of hours of plume shadowing over the 3-year period ranged from 9 hours to 29 hours (or an average of 3 hours to 10 hours per year) during the entire May through September period. This increase in hours of reduced solar radiation due to plume shadowing would not have a significant negative effect on the growth or health of the cherry trees in the nearby cherry orchards.

Greenhouse Gases

Greenhouse gases are described in Section 3.17, Cumulative Impacts.

Water Supply Pipeline, Natural Gas Pipeline, and Transmission Line

There would be no significant air quality impacts anticipated with the operation of the water supply pipeline, transmission line, or gas pipeline. Maintenance vehicles operating on unpaved access roads would generate minor amounts of dust.

3.2.3 Impacts of Alternatives

3.2.3.1 Alternative Tower Height and Longer Span Design

This alternative would not substantially change the air quality impacts compared to the proposed alternative.

3.2.3.2 Alternative Alignment near McNary Substation

This alternative would not substantially change the air quality impacts compared to the proposed alternative.

3.2.3.3 No Action Alternative

Under the No Action Alternative, the proposed project would not be built. No air quality impacts associated with the proposed project would occur. No acreage currently in cultivation and contributing to PM10 serious nonattainment in the project area would be converted to an alternate usage.

3.2.4 Mitigation Measures

3.2.4.1 Construction

No mitigation measures other than those included as part of the project design are warranted to comply with state regulations for reduction of fugitive dust.

3.2.4.2 Operation and Maintenance

Greenhouse Gas Emissions

Currently, there are no international, national, state, or local regulations that set numerical limits on greenhouse gas emissions. However, the Washington State rule relating to siting energy facilities (WAC 463-42-225, Proposal – emission control) requires the applicant to demonstrate that highest and best practicable treatment for control of emissions is used for a number of air pollutants including CO2. The Washington regulation does not specify how to quantify "highest and best practicable treatment" for CO2. To provide perspective on this issue, greenhouse gas offset programs within the Pacific Northwest were evaluated. The greenhouse gas elimination targets for other existing programs were discussed in the Draft EIS, including those in Oregon, Seattle, Vancouver Island, Chehalis, and Sumas. In May 2002, EFSEC accepted the Sumas Energy Generation Facility proposal to pay greenhouse gas emission fees of $0.57 per ton of CO2 emissions. This proposal is currently before the Governor for final consideration.

Since issuance of the Draft EIS, the applicant entered into a Settlement Agreement with the Washington State Counsel for the Environment to implement an environmental enhancement package. The Settlement Agreement acknowledges that greenhouse gas emissions are an important worldwide environmental issue with potential negative implications for Washington state. The Settlement Agreement stipulates that the Site Certification Agreement issued by EFSEC for the Wallula project shall require payments by Wallula Generation to environmental organizations for purposes of reducing greenhouse gas emissions and enhancing wildlife habitat. Payments totaling $5.35 million would be directly related to greenhouse gas mitigation and renewable energy projects, as follows:

- $1.0 million to the Last Mile Energy Cooperative to fund research into renewable energy and greenhouse gas reduction,
- $2.55 million to the Washington State University Energy Program, to be used to issue requests for proposals for greenhouse gas mitigation and renewable energy projects,
- $1.65 million to the Bonneville Energy Foundation for renewable energy projects including the photovoltaic solar project at the Hanford, Washington site, and
- $150,000 to the Blue Mountain Action Council to fund home weatherization projects.

The environmental enhancement package would include additional payments to other organizations to fund wildlife habitat protection, water resources management, and educational programs.

Criteria Pollutants (BACT and LAER)

The emission rates and PM10 emission offsets described in Section 3.2 are based on the applicant's proposed emission controls for BACT, LAER, and ERCs. EFSEC has issued draft PSD and NOC permits for public comment. It is possible that EFSEC or EPA could stipulate more stringent emission controls than are described in this document.

3.2.5 Significant Unavoidable Adverse Impacts

Controlled emissions from the Wallula Power Project could combine with emissions from other existing and proposed industrial facilities and contribute to cumulative air quality impacts along the eastern Cascade Mountains. Cumulative impacts are evaluated in Section 3.17.

3.3 Water Resources

Additional Information on Surface Waters and Flooding in the Project Area

Additional detail about surface waters and flooding in the project area is presented below. This information does not substantially change the conclusions about impacts presented in the Draft EIS.

The 5.1-mile interconnect would not cross any water bodies, nor are there any water bodies in the vicinity of the switchyard. The transmission line right-of-way would span the Walla Walla River, Juniper Canyon Creek, and numerous ravines and drainage areas where the presence of surface water is intermittent. The drainages that would be spanned by the proposed transmission lines drain westward or northward to the Columbia River.

Other water bodies near the right-of-way corridor include Smiths Harbor (a moderate-sized lake formed along the Walla Walla River), Juniper Canyon Creek, an ephemeral stream in Spring Gulch Canyon, Cold Springs Creek irrigation stream (a channelized stream), various ephemeral drainage ditches, and various wetland areas. In one of these ephemeral drainage ditches (within Section 23, Township 5 North, Range 28 East of the Hat Rock Quadrangle) a second culvert would be installed for the construction of an access road. The wetland areas include the potholes and ponds in the McNary Potholes Area and the wetlands on either side of U.S. Highway 395, approximately 0.25 mile south of U.S. Highway 730. The McNary Potholes is a portion of the 2,817-acre Wanaket Wildlife Area, an artificial wetland area created through a flood irrigation system from Columbia River water (operating from March 1 to October 31).

In terms of flooding, a catastrophic failure of a major impoundment dam upstream of the generation plant site would result in a considerably larger flood than the probable maximum flood (PMF) and could threaten the lower lying parts of the generation plant site, although such an event is considered unlikely. A failure of the Grand Coulee Dam represents the highest potential for inundation at the plant site. For this scenario, the highest probable water level is 378 feet MSL in Lake Wallula. Therefore, under this catastrophic flood scenario, some inundation could occur along the lower, western portion of the project site.

The pipeline alignments would all be located entirely above the 100-year floodplain and the PMF elevation of 356.5 feet MSL. With the exception of a short section of the combined pipeline alignment across the unnamed dry wash about 0.75 mile south of the project site, the pipeline laterals would also be well above the catastrophic flood that could occur in the event of a rapid breach of the Grand Coulee Dam. As described above for the plant site, the Grand Coulee Dam failure scenario represents the highest potential for inundation in the area. For this scenario, the highest probable water level in Lake Wallula is 378 feet MSL, compared to an elevation of approximately 370 feet MSL where the proposed pipelines would cross the dry wash south of the plant site.

The interconnect, transmission lines, access roads, and switchyard would be located at elevations well above the 100-year flood, PMF, and potential catastrophic flood that could occur in the event of an upstream dam failure along the Columbia River.

Additional Information on Groundwater Quality

The following excerpt updates Section 3.3.1.4 (Groundwater) from the Draft EIS. It presents updated information on the chemical makeup of supply water for the plant.

Groundwater Quality

Information on regional groundwater quality comes from previous regional and local studies and from samples collected by the applicant for this project. Most of the previous data focused on nitrate concentrations because shallow groundwater in much of the Pasco Basin has been contaminated by agricultural activities and nitrate levels are commonly high. For this project, a wider analytical array was obtained to evaluate the quality of the water that would be used for makeup cooling water for the generation plant.

Spalding et al. (1982) found that the primary source of groundwater nitrate in the project vicinity was leaching of agricultural fertilizers, with contribution from septic drainfields in the residential neighborhoods of the community of Burbank, and animal waste leaching in an alfalfa field irrigated with water from a cattle wastewater lagoon. The maximum nitrate concentration measured was 51 milligrams per liter (mg/L) nitrate, from a well downgradient of the wastewater spray field in the Wallula area. Two-thirds of the nitrate concentrations measured in that study fell in the range 6 to 14 mg/L.

Limited groundwater quality information from public water supplies was obtained from the Walla Walla County Health Department. They provided records of eight public water supplies that use 14 wells for industrial and public water supplies. The water quality data from these wells indicate that groundwater supplies near the proposed power plant meet most, but commonly not all, chemical requirements for untreated drinking water (maximum contaminant levels or MCLs). In particular, nitrate and fluoride consistently exceed drinking water MCLs at these sources. Local public water supplies with sources that contain nitrate concentrations above 10 mg/L treat drinking water to reduce nitrate concentrations. Agricultural and industrial water uses have less stringent water quality criteria than those for drinking water, and the exceedance of MCLs does not necessarily indicate problems for agricultural and industrial use.

Three of the public supply wells identified produce from the unconfined gravel aquifer, at depths ranging from 14 to 100 feet. Nitrate concentrations in these wells vary from 0.6 to 15.1 mg/L, compared to the primary MCL of 10 mg/L. Nine of the public supply wells produce from the Saddle Mountain Basalt aquifers. The shallow basalt wells (132 and 175 feet deep) are high in nitrate (15.9 and 35.7 mg/L) whereas all the deeper basalt sources contain nitrate concentrations of less than 2 mg/L. The public supply wells near the plant site have higher nitrate concentrations than wells to the north or south. The water quality data also indicate that fluoride concentrations exceed the secondary MCL of 2 mg/L in four of the local public water sources; however, none of those sources exceeded the primary MCL of 4 mg/L for fluoride.

Barr Engineering (1997) performed a detailed analysis for Boise Cascade Corporation of local groundwater quality in the unconfined gravel aquifer. They found that major ion chemistry of the shallow groundwater near the Columbia River has low total dissolved solids (TDS) (less than 250 mg/L), is of the calcium-chloride type, and changes upgradient (north and northeast) to the sodium-bicarbonate type with increased TDS (greater than 1,500 mg/L). Concentrations of sodium, potassium, calcium, iron, manganese, chloride, sulfate, ammonia, nitrate, bicarbonate, color, tannins and lignins, TDS, and specific conductance are high in upgradient areas and low in downgradient areas near the Boise Cascade Corporation Wallula Mill and irrigation wells. Water pumped from the irrigation wells is presumed to be a mixture of upgradient groundwater and infiltrated Columbia River water.

Water quality data from the new J.R. Simplot shop well just east of the project site and from and the 10 Boise Cascade Corporation Fiber Farm wells are summarized in Table 3.3-1. The J.R. Simplot well draws water from the lower Saddle Mountain Basalt aquifer, the same aquifer used by the Port of Walla Walla well.

Table 3.3-1. Chemical Analyses of Supply Water (mg/L)

Parameter (as ion, unless noted)	Boise Cascade Corporation Fiber Farm Wells (Gravel Aquifer)[a]	J.R. Simplot Shop Well (Basalt Aquifer)	Combined Water Supply to the Raw Water Storage Tank[b]
Barium	0.021 to 0.183	0.01	0.015
Calcium	23 .9 to 122.0	1.77	15.5
Iron	<0.02 to 0.05	ND	0.07
Lead	<0.001	ND	0
Magnesium	6.99 to 42.0	0.10	4.5
Manganese	<0.001	ND	0
Potassium	3.4 to 12.5	8.6	6.27
Silica	12.5 to 20.8	43.6	36.1
Sodium	12.2 to 113	70.2	39.2
Strontium	0.129 to 0.753	ND	0.06
pH	7.29 to 8.09	9.16	8.30
Conductivity (µmho/cm)	220 to 1500	331	275
Alkalinity, total as CaCO3	100 to 280	129	113
Bicarbonate alkalinity, as CaCO3	100 to 280	77	27.1
BOD (5-day)	< 1.0	12	5.53
Chloride	7.0 to 240	20.1	9.81
Fluoride	0.3 to 0.8	3.5	1.48
Nitrate (as nitrogen)	0.26 to 30.0	0.10	0.17
Phosphorus, total	0.035 to 0.072	0.03	0.04
TDS	160 to 1300	283	192
TSS	< 1.1 to 1.4	ND	1.68
Sulfate	17.0 to 260.0	0.8	6.17
Carbon, total organic (TOC)	< 1.5 to 3.4	ND	0.74
Turbidity (NTU)	< 0.05	0.5	0.63

[a] Data reflect a range of analytical values from 10 Boise Cascade wells, sampled in July 2001.
[b] Data are based on analyses available at the time the Application for Site Certification was prepared.
ND = no data

Analyses were performed for a wide range of chemical parameters to evaluate the suitability of the water for power plant uses. The chemistry of the source water samples was generally found to be consistent with the origins and ages of the waters. The Boise Cascade fiber farm wells draw upgradient groundwater mixed with river water that has infiltrated the Pasco Gravel aquifer. The analytical results from the 10 Boise Cascade fiber farm wells vary considerably, apparently reflecting the sources of water from which they draw. Those wells situated farthest from the Columbia River tended to have the highest levels of total dissolved solids (TDS), silica, nitrate, chloride, and alkalinity, all of which are suggestive of an upgradient source; in contrast those wells nearer the river tended to have lower concentrations of these parameters, closer to those typical of the river water.

Groundwater from the J.R. Simplot shop well is derived from the lower Saddle Mountain Basalt aquifer. This water is older, with attendant increases in TDS (283 mg/L), silica (43.6 mg/L), chloride (20.1 mg/L) and sodium (70.2 mg/L) and a decrease in calcium (1.77 mg/L) relative to water from the unconfined aquifer. The pH is strongly alkaline (9.16) and alkalinity is higher than most other samples (129 mg/L as CaCO3). The biological oxygen demand (BOD) was detectable (12 mg/L) whereas iron and manganese were not detected. Water quality from the new Port of Walla Walla well is likely similar based on its proximity to and comparable depth as the J.R. Simplot well.

Updated Water Supply and Water Rights Information

Since publication of the Draft EIS, the applicant has decided not to propose reusing stormwater for plant operations. This section updates the discussion of water supply for the proposed project that was provided in Section 3.3.1.5 of the Draft EIS. This section also provides additional information about the water rights transfer process and the Reports of Examination prepared by the Washington Department of Ecology.

The proposed project would consume a large quantity of groundwater, primarily as cooling water for the operation of the generation plant. The following discussion focuses on public and private water supplies that could be affected by that use.

Incidental use of this same source of water would be required during construction and for hydrostatic testing of the pipeline. Although there would be minor use of water associated with the construction, operation, and maintenance of the transmission lines, the amount of water used would be negligible relative to the overall water use from any likely public water supplier. Therefore, the transmission right-of-way is not discussed further with respect to public and private water supplies.

Water Rights Procurement and Water Production Plan

Cooling water for the power plant would come from three sources.

- Purchase of groundwater rights of a maximum flow of 1,200 gallons per minute (gpm) (limited to a volume of 1,800 acre-feet per year) from a deep on-site well owned by the Port of Walla Walla.
- Purchase and transfer of the water rights as part of the purchase of a portion of the Boise Cascade Corporation fiber farm agricultural land, for an instantaneous pumping rate of 9,485 gpm and a volume limited to 5,024 acre-feet per year.
- Purchase and transfer of the water rights as part of a purchase of conservation easements from the J.R. Simplot Company for a maximum instantaneous flow of 3,285 gpm (limited to 1,425 acre-feet per year).

The water purchased from the Boise Cascade Corporation and J.R. Simplot Company would all be pumped from 10 existing, relatively shallow wells located on the Boise Cascade Corporation fiber farm south of the plant site. These wells draw from the unconfined gravel aquifer. The on-site water would be drawn from the existing Port of Walla Walla well and a new backup well that would be installed on-site as part of this project. These deep wells would draw from the lower Saddle Mountain aquifer.

The total amount of water that can be delivered to the Wallula Power Project under these rights would be an instantaneous peak rate of 13,970 gpm, and limited to 8,249 acre-feet per year. This is considerably more than would actually be used. The estimated maximum water demand is 6,243 gpm, with an estimated instantaneous peak load of 7,901 gpm. The maximum expected annual water usage is estimated to average 4,087 gpm and the actual annual consumption is expected to be 5,218 acre-feet.

The applicant has secured purchase and lease options for land and associated water rights, as summarized in Table 3.3-2. A summary of the optioned water rights and amounts expected to be available to the project for industrial use after the change and transfer request process with the state of Washington Department of Ecology (Ecology) is shown in Table 3.3-3. The combined options would provide significantly more water rights than would be required by the Wallula Power Project. The exact rights to be acquired would be finalized once the water rights change protocol is completed with EFSEC and Ecology. The applicant would exercise only those options that are necessary for the project.

Table 3.3-2. Land and Water Rights Purchase Options

Ref.	Optionor	Optionee	Purchase Or Lease	Acres			Acre-Feet Per Year
				Irrigated	Dry	Total	
1a	Port of Walla Walla	Applicant	Purchase	130	45	175	
1b	Port of Walla Walla	Applicant	Purchase	Industrial Water Rights			1,800
2a	Boise Cascade Corporation	Applicant	Purchase	790	454	1,244	3,673
2b	Boise Cascade Corporation	Applicant	Purchase	453	27	480	2,153
3a	J.R. Simplot Company	Applicant	Purchase[1]	475		475	1,900
3b	J.R. Simplot Company	Applicant	Lease	1,200	400	1,600	4,800

[1] Purchase of conservation easements and proportionate allocation of water permit, not the underlying land. A new point of withdrawal has been request for the consolidated Boise Cascade Corporation fiber farm water rights.

Table 3.3-3. Optioned Water Rights Versus Maximum Expected Water Demand

Water Source and Use	Under Option		After Purchase, Change and Transfer		
	Instantaneous gpm	Acre-Feet Per Year	Average gpm	Instantaneous gpm	Acre-Feet Per Year
Port of Walla Walla	1,200	1,800	1,115	1,200	1,800
Boise Cascade Corporation	11,000[1]	5,826	2,700	9,485	5,024
J.R. Simplot Company	4,381	1,900	883	3,285	1,425
Total	16,581	9,526	4,698	13,970	8,249
Maximum Expected Water Demand			4,087	7,901	6,591
Optioned Water Supply Margin			611	6,069	1,658

[1] This would be 11,000 gpm from March 1 to November 30 and 3,500 gpm from December 1 to February 28.

Water Rights Options

The applicant would execute two separate options to purchase land and associated water rights from the Boise Cascade Corporation. Boise Cascade Corporation currently uses the agricultural land as a fiber farm to grow hybrid cottonwood, which it either sells to third parties or uses in its own pulp and paper mills. Boise Cascade Corporation has other fiber farms in the region that are newer and more efficient and intends to focus its fiber farm activities in those areas. The Wallula North and Wallula South fiber farm options entitle the applicant to purchase a total of 1,704 acres from Boise Cascade Corporation. Water rights associated with this property allow the irrigation of 1,243 acres, as shown in Table 3.3-4. Boise Cascade Corporation's current water rights certificates allow a total withdrawal of 5,826 acre-feet per year for agricultural purposes, with a permitted instantaneous withdrawal rate of 11,000 gpm from March 1 to November 30 and 3,500 gpm from December 1 to February 28.

The applicant would execute an option to purchase conservation easements and lease agricultural land and associated water rights from the J.R. Simplot Company (see Table 3.3-5). Currently, J.R. Simplot Company uses the agricultural land as part of its Grandview Farms operation with irrigation provided through the LeGrow Irrigation District. Water is withdrawn from the Wallula Pool in the McNary Reach of the Columbia River through nine pumps located at a riverside pumping station. Irrigation water is withdrawn between March 1 and November 30 and is distributed to approximately 18,000 acres under center-pivot irrigation through an extensive pumping and piping system.

The J.R. Simplot Company option entitles the applicant to purchase conservation easements on 475 irrigated acres and to receive a proportional water right entitlement based upon 4 acre-feet per year per acre. It also entitles the applicant to lease up to an additional 1,200 irrigated acres in quarter-section (160-acre) increments (each of these quarter sections has 120 to 130 central-pivot-irrigated acres) and to receive a proportional water right entitlement based upon 4 acre-feet per year for as long as the project remains as a viable commercial enterprise.

Table 3.3-4. Wallula North and South Fiber Farm Purchase Options Water Rights

Fiber Farm Location	Certificate Number	Family Farm Certificate	Reference Well Number	Priority Date	Allowable Irrigated Acres	Acre-Feet Per Year Per Acre	Acre-Feet Per Year	Gallons Per Minute	Time of Use Restrictions
North Farm	G3-28146C	Yes	43, 44, 45, 46, 47 (BCC 1, 2, 3, 4, 5)	1986	600	4.65	2,790	5,000	3/1 to 11/30
North Farm	G3-28683C	Yes	43, 44, 45, 46, 47 (BCC 1, 2, 3, 4, 5)	1989	190	4.65	883	2,500	3/1 to 11/30
South Farm	G3-21038C	No	35 (BCC 6)	1978	60	4.65	279	560	None
South Farm	G3-24791C	No	40 (BCC 7)	1976	901	5.1671	4651	3101	None
South Farm	G3-21037C	No	42 (BCC 8)	1973	80	4.65	372	800	None
South Farm	G3-21039C	No	39 (BCC 9)	1973	160	4.65	744	1,300	None
South Farm	G3-21936C	No	41 (BCC 10)	1973	63	4.65	293	530	None

1. A portion of G3-24791C is supplemental, or secondary, to G3-21037C. The supplemental portion is 340 gpm, 158 acre-feet per year, for the irrigation of 34 acres. These quantities were subtracted from G3-24791C to avoid double counting.
2. The applicant has requested consolidation of the existing points of withdrawal to utilize more fully and more efficiently the higher capacity wells.
3. The water rights for the North Farm wells are subject to the minimum flows set forth in the Columbia River Instream protection Program (WAC 173-663-040 and WAC 13-563-050.

Table 3.3-5. J.R. Simplot Company Water Rights Purchase and Lease Options

Certificate Number	Family Farm Certificate	Priority Date	Purchase Or Lease	Optioned Irrigated Acres	Acre-Feet Per Year Per Acre	Acre-Feet Per Year	Gallons Per Minute	Time of Use Restrictions
S3-2470P	No	11/13/75	Purchase	475	4.00	1,900	3,920	3/1 to 11/30
S3-2470P	No	11/13/75	Lease	≤ 1,200	4.00	≤4,800	≤11,070	3/1 to 11/30

Protocol for Water Rights Transfer Requests

Background

The applicant has worked with Ecology to define an appropriate protocol for the review, negotiation, and approval recommendation process for applicant's requested changes to the above-mentioned optioned water rights. The applicant has requested to participate in an environmental mitigation and enhancement program as described below. The applicant also has entered into a contract with Ecology to pay $344,200 for the purchase of water rights on the lower Walla Walla River. This purchase will complete a contract that Ecology had entered into earlier with a private landowner to purchase water rights appurtenant to 659 acres located on the lower reach of the Walla Walla River. The applicant's portion of this purchase will result in instream flow augmentation to the Walla Walla River in the amount of 2.8 cubic feet per second from April 1 to July 1. As part of this contract, Ecology agreed to provide a tentative determination as to the extent of water available for the proposed transfer. Because Ecology considered this purchase to be a significant environmental benefit, they also agreed to provide that determination on an expedited basis. An application may be processed prior to competing applications if "the change or transfer if approved would substantially enhance the quality of the natural environment" (Chapter 173-152-050(3) WAC). The Reports of Examination for each water right that would be transferred are included in Appendix C of this Final EIS.

Ecology and the applicant intend to negotiate the transfer and change process early in the EFSEC application review process. Once finalized, the applicant would request that EFSEC authorize the withdrawal of water as requested by the applicant for use at the facility. The EFSEC authorization of water use would be contingent upon issuance and governor approval of a Site Certification Agreement. The net effect of the water rights transaction and change approval process would be the creation of an in-stream flow benefit to the Walla Walla River because of the water right purchase described above, and an instream benefit to the Columbia River due to reduction from current levels of actual water withdrawals from the Boise Cascade fiber farm wells.

The specific transfer requests are designed to:

(a) Make all water withdrawals (except the Port of Walla Walla deep basalt well[s]) from Boise Cascade Corporation's fiber farm wells 1 through 10. This would eliminate the need to develop a new well field.

(b) Transfer Boise Cascade Corporation's water rights, including the Family Farm Certificates, directly to the applicant through an ownership change once the applicant exercises the options.

(c) Change the type of use from agricultural to industrial.

(d) Change the place of use from the agricultural lands where the water currently is being used to the Wallula Power Project.

(e) Expand the time of use for the seasonal water rights to year round.

Water Rights Discounting Procedure

Only water rights that have been in demonstrated use over the previous 5 years may be transferred. For irrigation water rights, the quantity "used" is defined as the quantity consumed by plants. The Boise Cascade Corporation fiber farm water rights that would be changed to an industrial use are based upon a crop demand of 4.25 acre-feet of water per irrigated acre. The J.R. Simplot Company water rights that would be changed from agricultural to industrial use are based upon a crop demand of 3.50 acre-feet of water per irrigated acre.

Expedited Processing

Currently, the Walla Walla River habitat is stressed during low flows because of elevated water temperatures and reduced dissolved oxygen. The applicant has consulted with Ecology on measures it could take to improve in-stream flows in the Walla Walla River as a step to improve the aquatic habitat and thereby meet the requirements of Chapter 173-152 WAC for priority processing of an application for a transfer or change of water rights.

To meet Ecology's requirement for expedited processing, the applicant has contributed to the purchase of water rights on the Walla Walla River previously negotiated under a purchase option agreement between Ecology and the landowners in question. A financial contribution of $344,200 by the applicant would allow Ecology to complete the purchase of the final 573.66 acre-feet per year contemplated by the option agreement. Assuming the full 702 acre-feet per year represents an in-stream flow benefit, the voluntary contribution by the applicant represents 12% of the Wallula Power Project's maximum expected annual water usage of 5,826 acre-feet from shallow groundwater.

The tentative determination as to the extent of water available for the proposed water rights transfer is described in Ecology's Reports of Examination, which are provided in Appendix C of this Final EIS. Those reports tentatively determined that the implementation of the proposed transfer and change in use of the Boise Cascade fiber farm water rights would not impair existing water rights, provided flow provisions for the Columbia River are carried over and adhered to. They also determined that the proposed changes would not prove detrimental to the public welfare/interest, nor would they result in enhancement of the original water right.

Additional Information on Handling of Plant Wastewater

The following text updates Section 3.3.2.2 of the Draft EIS. It provides additional information on how wastewater from the power plant would be handled.

No plant wastewater would be discharged to the surface or groundwater environment. Blowdown water would be drawn from the cooling water stream at a rate between 160 gpm and 310 gpm, then be sent to the wastewater storage tank. Under normal operation conditions, the wastewater would be cycled directly from the tank to a brine concentrator. The wastewater would be heated, vaporized, and a clean water distillate would be drawn off for future use so as to reduce volume of raw water required for cooling tower makeup water.

The clean distilled water would be sent to the inlet of the power plant mobile polishing units or to the service water tank for reuse in the power plant water systems. The concentrated brine fluid produced in the process would be sent to one of two 100% capacity decant basins to settle out a majority of solids before overflowing to one of two lined evaporation ponds that together cover a 22-acre area. Evaporation to the atmosphere would remove the remaining liquid.

Because there would be no discharge of industrial wastewater to surface or groundwater, no off-site water quality impacts would result from operation of the plant. In order to prevent the concentrated brine from reaching either the surface water or groundwater, the evaporation ponds would be lined with a series of protective layers. The uppermost layer would consist of soil or sand to protect a 60-mil HDPE liner. This membrane would, in turn, be underlain by geosynthetic clay liner. A leakage detection system, consisting of a pipe collection system, would be placed under the clay liner to collect any leakage into a sump. Underlying the piping and sump system would be a 30-mil liner. The leakage detection system would be monitored by facility personnel to ensure the integrity of the evaporation pond liners.

Additional Clarifications to Groundwater Text

The following updated text is provided for clarification and in response to comments on the Draft EIS regarding groundwater use and monitoring. The section below originally appeared on pages 3.3-29 through 3.3-32 of the Draft EIS.

Groundwater

Plant Site

Substantial groundwater would be required to operate the Wallula Power Project. The estimated peak full load hourly water demand, at an air temperature of 98°F, is 7,901 gpm. The maximum expected annual usage is estimated at 4,087 gpm, which is equivalent to 6,591 acre-feet per year, whereas the estimated annual water usage is 3,235 gpm, or 5,218 acre-feet.

The water requirements for operating the generation plant would be met by groundwater extraction from a series of wells at the Boise Cascade fiber farm, which draw water from the shallow gravel aquifer, and deep on-site wells that draw water from the lower Saddle Mountain Basalt aquifer. Potable water would be provided by the Boise Cascade wells. These water uses would all be offset by termination of current uses through the transfer and purchase of existing water rights.

The project would include the following design elements to conserve groundwater.

- The cooling tower water chemistry is designed to accommodate 20 cycles of concentration, thus reducing the volume of raw water makeup required to make up for evaporation and cooling tower blowdown.
- The mechanical draft cooling tower would include high efficiency drift eliminators that would reduce drift water losses to 0.0005% of circulating water flow. The average annual loss from blowdown and drift loss is estimated at 161 gpm, with as much as 311 gpm during the peak month of operation.
- The plant design includes a zero discharge system to process wastewater to produce a clean distillate for reuse.

The expected impacts of the groundwater extractions for plant operation are described in the following subsections. Two aquifer systems would be affected, the shallow unconfined gravel aquifer, and the deep lower Saddle Mountain Basalt aquifer.

Effects on the Gravel Aquifer. Proposed withdrawal rates from the Boise Cascade Corporation's fiber farm wells would differ from the historical irrigation use. The maximum annual raw-water demand from these wells for the power plant is estimated at 4,793 acre-feet, compared to the 5,024 acre-feet transferable from the Boise Cascade Corporation fiber farm water rights. A comparison of monthly irrigation demand at the Boise Cascade Corporation fiber farm to raw-water demand at the power plant (described below) indicates that the latter would be lower during the maximum evapotranspiration season (May through September), but greater during the remainder of the year.

The effects of pumping under both current and expected future conditions were analyzed using a simplified MODFLOW model of the gravel aquifer in the vicinity of the Boise Cascade Corporation's fiber farm wells. The results of the analysis indicate that existing wells would not be impaired by the change in the pattern of pumping at the Boise Cascade Corporation fiber farm wells because future water level fluctuations would be less than current fluctuations. Also, maximum water use by irrigators and domestic users occurs during the summer when water levels under future conditions would be higher than historical values because the pumping rates would be reduced.

The current water use estimates for the fiber farm wells are based on the following information provided by Boise Cascade Corporation:

- well testing data;
- the rate each well pumps when it is turned on ("operational use rate");
- the number of acres planted in hybrid cottonwood trees of varying age;
- the water demands by mature hybrid cottonwood trees; and
- the typical length of an irrigation season (6 months).

Seven water rights for Boise Cascade Corporation's fiber farm wells permit irrigation of up to 1,243 acres, whereas 1,182 acres are planted at this time. The water rights allow annual applications of 4.65 to 5.167 acre-feet of water per acre.

One acre of tree seedlings at the Boise Cascade Corporation fiber farm has consumed about 1.25 feet of irrigation per acre per year, whereas mature cottonwood trees (4 to 7 years old) have consumed about 4.5 feet of irrigation water per acre. Thus, each water right is periodically used to a maximum extent of about 4.5 feet of water per year. The water consumption figures are based on Boise Cascade Corporation fiber farm water application volumes and Boise Cascade Corporation's knowledge that little of the applied water goes unused. Boise Cascade Corporation knows that little water goes unused because they use soil moisture monitoring devices to prevent over-irrigation. The Boise Cascade Corporation value of 4.5 feet of annual water consumption by hybrid cottonwoods is on the low end of values documented in studies (U.S. Environmental Protection Agency 1988 as cited in Wallula Generation 2001). The average monthly actual evapotranspiration (AET) was estimated by approximation of the seasonal rates of "Reference Evapotranspiration" for the nearest Public Agricultural Weather System at Sunnyside, Washington (54 miles west-northwest of Wallula). To estimate monthly AET at the project site, the sum of monthly AETs was scaled to equal the estimated irrigation demand of 4.25 feet (51 inches) at the Boise Cascade Corporation fiber farm. The 6-month irrigation season was assumed to encompass mid-April to mid-October.

The resulting maximum monthly irrigation demand is 1,005 acre-feet in July, which equals an average withdrawal rate over all hours of 7,335 gpm. No irrigation demand occurs from mid-October through mid-April. The monthly total irrigation demand was allocated among all wells according to their respective percent of total production capacity. This approach assumes that all wells were pumped simultaneously for the same length of time and each at its "operational use rate."

The monthly raw-water demands at the power plant were estimated for comparison to the irrigation demand estimates. The raw-water demand estimates differ slightly from the power plant requirements by an amount of uncertainty referred to as "design contingency." Consistent with the allocation of Boise Cascade Corporation water use, the applicant assumed that the total monthly demand would be met by withdrawals from existing wells according to the percent of total production capacity currently provided by each well.

Currently the plant site is irrigated farmland. Elimination of seasonal irrigation of the site would result in a reduction of recharge to the shallow aquifer. This could lower the water table locally, and result in a reduction of groundwater discharge to the Columbia River. However, since the irrigation water currently used on the site is obtained by withdrawals directly from the Columbia River, there would be no net loss to the river; rather there could be a beneficial impact of slightly increased streamflow because evapotranspiration losses would be eliminated. Since the shallow groundwater is not in direct connection with any other surface water bodies at or near the site, this reduction in recharge would not impact other surface water bodies.

Effects on the Lower Saddle Mountain Basalt Aquifer. Drawdown of the potentiometric surface within the lower Saddle Mountain Basalt aquifer would occur as a result of pumping from the new on-site well and the Port of Walla Walla supply well. If the currently permitted pumping rate of 1,200 gpm is extracted from a single well, the pumping water level in that well would be expected to draw down from slightly less than 160 feet below ground surface after 60 minutes of pumping to somewhat more than 160 feet below ground surface after 10,000 days (27 years) of pumping. Similar water levels would be expected to occur in the pumping wells if the two on-site wells are interchanged periodically. If both wells were used simultaneously to produce a total of 1,200 gpm, the resulting pumping water level in each well would be shallower (less drawdown) than if a single well were used at any given time.

Using an incremental interference method to evaluate drawdown impacts to other wells in the vicinity, Pacific Groundwater (2001) determined that the maximum drawdown impact from the effect of long-term pumping of the Port of Walla Walla well at 1,200 gpm would be to lower the static well water level by approximately 11 to 37 feet in the J.R. Simplot Company and the Iowa Beef Processors wells, and in the general vicinity of the pumping well. The Port of Walla Walla well is at the south boundary of the plant site. The J.R. Simplot well is approximately 3,000 feet northeast of the Port of Walla Walla well, and the Iowa Beef Processors wells 8 and 10 are located about 4,000 feet northeast of the Port of Walla Walla well.

The normal pumping rate in the J.R. Simplot Company well is approximately 1,200 gpm, with an attendant pumping water level of approximately 320 feet below the top of the casing. The pump is reported to be set at either 650 or 500 feet below the wellhead. Therefore, interference drawdown caused by pumping 1,200 gpm from the Port of Walla Walla wells would not prevent the J.R. Simplot Company well from extracting their accustomed quantities of water from the new shop well because the pumping water level would remain far above their pump intake.

The normal pumping rate in the Iowa Beef Processors well is 450 gpm. The pumping water level is not known, however, the pump was lowered recently to maintain well yield (personal communication between Gerome Dyba, Iowa Beef Processors and Charles Ellingson, Pacific Groundwater Group, as cited in Pacific Groundwater Group 2001). The decreased yield in the Iowa Beef Processors well could be related to plugging of the well intakes, or to lower aquifer water levels. Based on this limited information, it is possible that pumping 1,200 gpm from the Port of Walla Walla wells could exacerbate problems at the Iowa Beef Processors well. Routine groundwater level monitoring would be performed to allow timely response to remediate any unexpected and adverse conditions that could result from pumping at the power plant.

Other wells in the area are generally screened in shallower aquifers that would either not be affected by the groundwater extractions required to meet the project's water requirements from the Port of Walla Walla well, or the effects would be minor compared with those potentially affecting the wells described above.

Revisions to Water Resources Mitigation Measures

Following is an updated list of mitigation measures for water resources.

Mitigation measures included within the project description and design to protect groundwater quality are as follows.

- The only wastewater that would be discharged to the ground would be domestic sanitary wastewater. It would be discharged to a septic system and drainfield designed and operated in accordance with local regulations and industry standards.
- The stormwater runoff from within the bermed area surrounding the power plant would be directed to oil/water separators and then to an unlined pond for evaporation and infiltration. Stormwater from plant site areas outside the bermed power plant facility would be routed directly to the unlined pond for evaporation and infiltration.
- The project design would employ a zero liquid discharge system, including the use of brine concentrators and evaporation ponds. This would eliminate potential water contamination from wastewater discharges.
- The evaporation ponds would be lined with a 2-foot-thick clay liner, on top of which would be a high-density polyethylene (HDPE) liner, which, in turn would be covered with a layer of soil or sand to protect it from damage. A leakage detection system consisting of a filter sand and a network of collection pipes and sumps would be installed under the evaporation ponds to detect and collect any leakage that might occur through the pond liners. A 30-mil liner would underlie this collection system. This leakage detection system would be monitored by plant personnel to ensure the integrity of the pond liners.
- The limited quantities of hazardous materials required for water treatment would be handled within containment in accordance with regulations.
- Shallow groundwater quality would be monitored routinely in monitoring wells installed for this project.

With implementation of these measures, impacts to groundwater quality during project operation and maintenance are not expected to be significant. As discussed earlier with respect to groundwater quantity, the impacts from groundwater extraction on the shallow aquifer are not expected to be significant. Local lowering of the potentiometric surface in the lower Saddle Mountain Basalt aquifer may have some impact on nearby wells that draw water from the same aquifer. The deep nearby wells that could potentially be adversely affected would be monitored to detect any detrimental effects so that a timely remedy could be provided. Impacts to nearby wells that are screened in overlying aquifers are expected to be insignificant.

3.4 Wetlands and Vegetation

Entrix conducted a botanical survey along the proposed transmission line and access road rights-of-way in May 2002 to identify special-status species that would likely bloom during the survey period. Special-status species were those that could be present based on habitat requirements and historical records of special-status plant species in the project area. The findings of the spring 2002 surveys and other updates to the text of Section 3.4 are presented in the following section.

Removal of Temporary Access Road from Proposed Project

Chapter 1 of this Final EIS has been updated to indicate that the temporary access road to the power plant is no longer proposed. Impacts to disturbed shrub-steppe habitat that would have occurred during construction of the temporary access road will no longer occur.

Revised Buffers

Buffers around wetlands at the plant site would be 50 to 100 feet, not 100 feet as stated in Section 3.4.2.1 of the Draft EIS.

Updated Vegetation Acreages for Transmission Line

Entrix provided the following updated information about acreages of vegetation types along the transmission line. This information originally appeared in the Draft EIS, Section 3.4.1.2 Vegetation.

Transmission Line and Associated Facilities

The right-of-way would cross a varied topography, including stream valleys and floodplains with center-pivot irrigation circles and riparian and wetland vegetation; undulating hills with grain fields, other agriculture, grasslands; and a plateau with native shrublands, pothole wetlands, and urban development. Total acreages of plant community types located in the area of the right-of-way are listed in Table 3.4-1.

Table 3.4-1 Vegetation Types along Transmission Line Right-of-Way

Vegetation Type	Acres[1]
Agricultural	124
Burned shrubland	49
Freshwater marsh	4-6[2]
Grassland	129
Pasture	56-58
Riparian	25
Russian olive	21
Big sagebrush-bitterbrush steppe	32
Sagebrush steppe	212
Sagebrush steppe/grassland	7
Open water	6
Grand Total	665-669

1 Estimated acres of vegetation types conservatively assume a 200-foot right-of-way near the existing PacifiCorp transmission line.

2 Acre range for freshwater marsh and pastureland consider two alternate routes for the right-of-way entering the McNary Substation.

The Wallula-Smiths Harbor segment would traverse approximately 5.1 miles of disturbed shrub-steppe habitat, grassland habitat, fallow farmland, and the Boise Cascade Corporation fiber farm (including poplar stands). The new Smiths Harbor-McNary segment would parallel an existing 500 kV Bonneville transmission line beginning in the Walla Walla River Valley. It then would cross the Walla Walla River and climb through rangeland to the tops of the broad ridges along the Columbia River generally planted with wheat. Slopes are typically steep from the ridgetops into the interspersed drainages. Most of the drainages in the project vicinity are dry nearly all year long and the valley bottoms, as well as the slopes, usually are vegetated by cheatgrass-dominated grassland. However, Juniper Canyon has a perennial stream bordered by a narrow band of freshwater marsh vegetation. A few of the uncultivated rangeland ridgetops just south of the Walla Walla River are vegetated by sagebrush-steppe and grassland with scattered big sagebrush and other small shrubs among the cheatgrass. These sagebrush and grass vegetation communities are referred to as shrub-steppe habitat. Shrub-steppe habitat is present throughout the transmission line right-of-way as small, fragmented parcels of disturbed habitat.

West of Juniper Canyon, vegetation along the project route consists of an intermingling of sagebrush-steppe dominated by big sagebrush and rabbitbrush, and big sagebrush-bitterbrush shrubland dominated by bitterbrush and big sagebrush. Grasses, including cheatgrass, and other herbaceous plants grow between the shrubs. The area west of Juniper Canyon had burned shortly before the vegetation study was conducted, and part of the project route passes through this burned area.

Before reaching Umatilla, the transmission line route would cross an area of pothole wetlands interspersed with sagebrush-steppe/grasslands. The sagebrush-steppe/grassland areas are dominated by big sagebrush and cheatgrass. The route would continue across pastures and developed areas, and cross a freshwater marsh just before the McNary Substation in Umatilla.

There are 70.7 acres of existing access roads along the transmission line right-of-way. Existing access roads occur mostly along disturbed sagebrush-steppe and grassland habitat (see Table 3.4-1). All existing roads are approximately 20 feet wide.

Results of Spring 2002 Survey for Special-Status Plants

Since the Draft EIS was issued, Entrix conducted a botanical field survey and prepared a biological assessment (BA) for the 5.1-mile Wallula-Smiths Harbor transmission line interconnect and the Smiths Harbor Switchyard. The BA addresses all areas within a 2-mile radius (action area) of the project area. No federally listed threatened, endangered, or candidate plant species have been identified within the action area. The BA is included as Appendix D of this Final EIS.

The U.S. Fish and Wildlife Service identified one sensitive plant species potentially occurring in the vicinity of the project site. Ute ladies' tresses *(Spiranthes diluvialis)* is listed at both state and federal levels as a threatened species. The blooming season for this species is in late summer. Ute ladies' tresses is a perennial orchid. It generally occurs in moist soils in mesic or wet meadows and riparian zones near springs, lakes, or perennial streams. No such habitat was found during field surveys conducted by Entrix in May 2002. Because no suitable habitat is present, Ute ladies' tresses is not expected to occur within the power plant site nor along the transmission line interconnect. However, a "may affect, but not likely to affect" determination was concluded in the BA because field surveys were conducted at a time other than the blooming season for this species.

During the May 2002 survey two potential special-status plant species were observed within the transmission line right-of-way. A small population of cryptantha was tentatively identified as beaked cryptantha (*Cryptantha rostellata*), a state sensitive plant. A positive identification to distinguish this plant from *C. flaccida*, a non-TES species with similar appearance and habitat, was not made because mature nutlets were not present on the plant at the time of field identification. A small population of lupine was tentatively identified as a subspecies of prairie lupine (*Lupinus cusickii*), a state sensitive plant. The lupine was found in a sandy area of the right-of-way just north of the Walla Walla River. These two plant species were the only potential special-status species observed during the botanical surveys. No other special-status plant species were observed within the areas that would potentially be disturbed.

Given the relatively small confined area where the plants identified as potentially having special status were found, standard precautions including demarcation and avoidance would minimize disturbance or impact to the plants during operation and maintenance activities associated with the transmission line. If the areas containing these populations cannot be avoided during construction, a positive identification of these species would be needed prior to ground disturbance to determine whether the plants have special status and to determine appropriate mitigation for impacts.

Refinement of Construction Impacts for Power Plant Site

The project is designed to avoid *construction* impacts on wetlands at the plant site. No project features located at the plant site (buildings, pipelines, transmission lines, access roads) would be constructed within wetlands or wetland buffers. The applicant does not propose any additional activities that would involve disturbance, dredging, or filling of wetlands.

Refinement of Construction Impacts for Transmission Line

The following text is provided to clarify and update the Draft EIS discussion of construction impacts to wetlands and vegetation for the transmission line.

Transmission Line and Associated Facilities

There would be minimal clearing of vegetation within the right-of-way. Potential impacts to vegetation include removal or trampling and soil compaction from construction activity at tower locations and along new access roads. Compaction of soils can inhibit infiltration of water into the soil and inhibit the germination of seeds; it favors development of bare-soil species, including noxious weeds.

The transmission line right-of-way would require access roads along the majority of the 33-mile corridor. Access roads associated with the existing transmission line and public access roads could be utilized for the proposed transmission line. Approximately 70.2 acres of land would be cleared for new access roads and for improvements to existing access roads. A strip approximately 25 feet wide would be cleared of vegetation for construction of new access roads. Improvements to existing access roads would clear up to 4 feet of vegetation to widen the road, the width varying due to current condition of the roads. Improvements to approximately 70.7 acres of existing roads would result in up to 14.3 acres of permanent impact to disturbed shrub-steppe and grassland habitat. An additional 45.1 to 55.9 acres of vegetation, primarily disturbed sagebrush-steppe, grassland, and agricultural habitat, would be cleared to construct new access roads for maintenance of the proposed transmission line (Table 3.4-2). The estimated impact for access road construction and improvement is based on a conservative estimate of a 25-foot road width. The width of access roads would vary from 16 to 30 feet (averaging 20 feet). All existing roads are approximately 20 feet wide but may require up to a 4-foot widening and compaction of the road surface.

There would be approximately 0.25 acre of temporary impact to vegetation and approximately 0.05 acre of permanent impact to vegetation at each tower location. Installation of the tower structures would temporarily disturb a total of approximately 40.9 acres and permanently disturb a total of approximately 8.3 acres of vegetation along the right-of-way (Table 3.4-3). Approximately 17.6 additional acres would be temporarily disturbed during placement of the conductors.

The area around the Smiths Harbor Switchyard is in disturbed shrub-steppe habitat. Approximately 7 acres of shrub-steppe vegetation would be permanently removed for the installation of the switchyard and associated fencing.

Table 3.4-2. Vegetation Impacts Due to Access Road Construction and Improvements to Existing Access Roads

Access Road	Habitat Type	Acres	Total Acres	Potentially Disturbed Acres
Access Roads off Right-of-Way to be Acquired	Burned sagebrush	0.2	14.2	0 - 2.9
	Agriculture	0.9		
	Grassland	3.0		
	Residential/Industrial	4.8		
	Sagebrush-steppe	5.2		
Existing BPA access roads	Burned sagebrush	0.4	35.1	0 - 7.1
	Pasture	2.9		
	Sagebrush-steppe	7.6		
	Grassland	8.3		
	Agriculture	15.8		
New Access Road Construction	Residential/Industrial	0.4	55.9	45.1 - 55.9
	Russian olive	0.5		
	Big sagebrush-bitterbrush	2.3		
	Pasture	3.3		
	Burned sagebrush	6.4		
	Agriculture	9.1		
	Grassland	14.8		
	Sagebrush-steppe	19.1		
Existing Access Road on Right-of-Way	Grassland	1.7	21.4	0 - 4.3
	Agriculture	2.0		
	Big sagebrush-bitterbrush	2.3		
	Burned sagebrush	3.0		
	Sagebrush-steppe	12.4		

Table 3.4-3 Estimated Vegetation Impacts from Tower and Conductor Construction

	Proposed Action Standard Towers (1,150-foot average span)			Alternative using Standard Towers + Alternate Towers[1] (1,500-foot average span)				Pulling and Reeling Sites[2]
		Acres Disturbed		# Towers		Acres Disturbed		Acres Disturbed
Vegetation Types	**# Towers**	**Temporary**	**Permanent**	**Standard**	**Alternate**	**Temporary**	**Permanent**	**Temporary**
Grassland	33	8.3	1.7	21	10	7.8	1.6	3.6
Agriculture (nonirrigated)	27	6.8	1.4	0	21	5.3	1.1	2.9
Agriculture (irrigated)	16	4.0	0.8	16	0	4.0	0.8	1.7
Sagebrush-steppe	50	12.5	2.5	25	19	11.0	2.2	5.4
Burned shrubland	10	2.5	0.5	0	8	2.0	0.4	1.1
Big sagebrush	4	1.0	0.2	0	3	0.8	0.2	0.4
Russian olive	5	1.3	0.3	5	0	1.3	0.3	0.5
Pasture	14	3.5	0.7	14	0	3.5	0.7	1.5
Residential/industrial	4	1.0	0.2	4	0	1.0	0.2	0.4
Riparian	0	0.0	0.0	0	0	0.0	0.0	0.1
Totals	**163**	**40.9**	**8.3**	**85**	**61**	**36.7**	**7.5**	**17.6**

Temporary impact = 0.25 acre/tower
Permanent impact = 0.05 acre/tower
Pulling and reeling temporary disturbance = 1 acre/2 miles of transmission line (acreage estimates are prorated based upon abundance of vegetation type).
[1] Longer conductor spans for alternative (acreage estimates for long span segment are prorated based upon abundance of vegetation type).
[2] Temporary acres disturbed by pulling and reeling would be the same for the proposed action or the alternative.

Updated Mitigation Measures for Power Plant

Since publication of the Draft EIS, the applicant has reached an agreement with the Washington Department of Fish and Wildlife (WDFW). The applicant will monitor and protect wetland hydrology for the wetland complex located along the western portion of the project site (designated Habitat Reserve Area by the applicant). The applicant will install a staff gage in the deepest portion of the wetland complex and monitor water level changes in the wetland. The applicant will attempt to secure use of the South Columbia Irrigation District or adjacent domestic water well in order to provide a minimal seasonal water level in the wetland complex. If dewatering of the wetlands occurs, the applicant will investigate alternative mitigation options.

In the same agreement with WDFW, the applicant will mitigate for project impacts to vegetation for habitat loss by taking the following actions:

- provide 74 acres of dryland cultivated native grass habitat with a component of native shrubs and forbs;
- place approximately 640 acres aside as a perpetual conservation easement, planted in native dryland grass with a component of native shrubs and forbs with restricted cattle grazing;
- support through funding the WDFW acquisition of native shrub habitat;
- provide funding ($50,000) to USFWS for wetland and riparian enhancement activities under USFWS Wallula Wetlands and Riparian Project, Phase II, located along the Walla Walla River at the McNary National Wildlife Refuge; and
- provide funding ($25,000) to research biological control agents for weed control on the project site and surrounding properties.

Since the writing of the Draft EIS, the applicant has reduced the footprint of the power plant facilities to 64 acres with as much as 89 acres potentially restored with native grasses and shrubs. The settlement with WDFW is based on approximately 76 acres of habitat area at the site after construction.

The applicant will monitor revegetation success and provide documentation to EFSEC and WDFW on monitoring and meeting performance standards.

Revisions to Significant Unavoidable Adverse Impacts

The following updates to Section 3.4.5 Significant Unavoidable Adverse Impacts have been made in response to comments on the Draft EIS and to incorporate information from Settlement Agreements.

> No significant unavoidable adverse impacts have been identified. It is anticipated that wetlands lying immediately to the west and southwest of the project site could cease to exist due to cessation of irrigation practices at the project site. However, potential loss of wetland habitat value related to project construction and operation is being mitigated by the applicant’s provision of funding as stipulated in an agreement with Ecology for the proposed enhancement of riparian habitats along the lower reach of the Walla Walla River via purchase and transfer of water rights and the planting of approximately 145 acres of land with native trees. As a result, the overall impact to habitat value is not considered significant.

3.5 Agricultural Crops and Livestock

Please see Section 3.2 of this Final EIS for an updated discussion of potential impacts on cherry orchards resulting from power plant plumes.

The Entrix spring 2002 surveys indicated the 5.1-mile segment of the transmission line would cross 1.2 miles of irrigated agricultural land (poplar farm). The 5.1-mile transmission line segment would not cross livestock lands. The access roads would cross less than 0.5 mile of grassland used for livestock pasture.

Approximately 6.8 and 4.0 acres of nonirrigated and irrigated crops, respectively, would be temporarily disturbed by placement of structures within the transmission line right-of-way and 5.1-mile segment. Permanent disturbance to agricultural land would be 1.4 acres of nonirrigated and 0.8 acre of irrigated land. An additional 4.5 acres would be temporarily disturbed as a result of the pulling and reeling sites along the transmission line. Most of the agricultural land that would be impacted along the transmission line corridor is currently used for dryland agriculture. According to 2000 data, this acreage of permanent disturbance represents a fraction of 1% of total wheat grown in both counties. A maximum of 27.8 acres of agricultural land would be removed for construction of access roads.

3.6 Wildlife

Spring 2002 Wildlife Surveys

Entrix conducted additional wildlife surveys of the transmission line and access roads in spring 2002. The BA in Appendix D of this Final EIS provides detailed information about wildlife species observed during those surveys.

Revised Acreages for Habitat Types Affected by Transmission Line

Entrix reported a reduction in the amount of shrub-steppe habitat along the updated transmission line right-of-way (41% or 300 acres of the 734-acre transmission line right-of-way mapped as shrub-steppe in spring 2002, compared to 316 acres or 49% reported in the Draft EIS).

Grassland and agriculture habitats in the right-of-way consist of wheat fields, irrigated pasture, the Boise Cascade Corporation fiber farm (including poplar stands), invasive cheatgrass, and grasslands in the palustrine area. The 5.1-mile interconnect transmission line alignment is composed primarily of grassland, fallow farmland, and poplar stands. Approximately 309 to 311 acres, or 42% of the potential right-of-way, were documented as grassland and pasture in spring 2002 (compared to 293 to 295 acres or 40% reported in the Draft EIS). See Table 3.6-1 for updated habitat impact acreages.

Table 3.6-1. Impacts to Wildlife Habitats Resulting from Tower and Conductor Construction

Wildlife Habitats	Standard Towers (1,150-foot average span)			Alternative using Standard Towers + Alternate Towers (1,500-foot average span)				Pulling and Reeling Sites
	Number of Towers	Acres Disturbed		Number of Towers		Acres Disturbed		Acres Disturbed
		Temporary	Permanent	Standard	Alternate	Temporary	Permanent	Temporary
Grassland and agriculture	90	22.5	4.5	51	31	20.5	4.1	9.8
Sagebrush-steppe	64	16.0	3.2	25	30	13.8	2.8	7.0
Palustrine	5	1.3	0.3	5	0	1.3	0.3	0.5
Riparian	0	0.0	0.0	0	0	0.0	0.0	0.1
Subtotal	159*	39.8	8.0	81*	61	35.6	7.2	17.4

Temporary impact = 0.25 acres/tower
Permanent impact = 0.05 acres/tower
Pulling and reeling temporary disturbance = approximately 1 acre for every 2 miles along the transmission line
*Number does not include residential/industrial estimates for tower placement

Updated Special-Status Species Information

The BA prepared by Entrix for the 5.1-mile transmission line segment and Smiths Harbor Switchyard concluded that the project may affect bald eagles. However, since no critical habitat will be affected for the bald eagle and no direct take will occur, the effect is not likely to be adverse (see Appendix D).

Ord's kangaroo rat, listed as a state monitor species, was positively identified within the northeast section of the switchyard. Clearing shrub-steppe habitat during construction of the switchyard could impact the potential population of this species. Impacts to Ord's kangaroo rats resulting from construction of the temporary access road to the plant site would not occur because the temporary road is no longer proposed.

Two additional species that could be affected by habitat loss from clearing sage-steppe and grassland vegetation for construction of the transmission line are the golden eagle and the black-tailed jackrabbit.

Additional Information on Prevention of Bird Strikes

In response to comments on the Draft EIS, the following clarifies and expands on the discussion of measures that will be used to avoid bird strikes at the power plant and along the transmission line.

The Wallula Power Project would include four HRSG exhaust towers, each 175 feet tall, 25 feet lower than the 200-foot height limit recommended by the USFWS (USFWS 2000a). These smaller exhaust towers do not require guy wires for support. Guy wires are often cited as a cause of avian mortality, and their exclusion will help to minimize risk of collision (Manville 2000, Avery 1977).

The existing transmission line creates a level of risk. Areas of highest concern are where transmission lines cross bird flight paths or areas of high bird activity. These areas of concern are located at the Walla Walla River crossing, the span across Spring Gulch, the span across Juniper Canyon, the spans across the Wanaket Wildlife Area, and the palustrine area. Bird diverters would be installed in these areas, as described in Appendix A, in order to decrease the risk of bird collisions in this area. The bird diverters would be spaced at the optimal spacing prescribed by the manufacturer or per Bonneville's standard design, which depends on span length.

Because the new Smiths Harbor-McNary transmission line segment would be placed in an area already containing the same potential risk, the impact would be less than if a new line were placed where there is no existing transmission line. The new towers and conductors will be matched as closely as possible to the height of the existing line to lessen the risk of bird collisions. Risks and associated mortality would increase to some degree relative to the existing conditions. Bonneville is currently funding research to develop improved technology for monitoring bird strikes.

Other Factual Corrections

On page 3.6-10 of the Draft EIS, under "Transmission Line and Associated Facilities," the rutting season for deer and elk is revised as follows:

> Resident deer and elk could be disturbed by construction noise and activity during sensitive times of the year, such as the rutting season ~~(September 15 – October 31)~~ (August through November) and calving/fawning season (May 1 through July 15).

3.7 Fisheries

The BA prepared by Entrix for the Wallula-Smiths Harbor transmission line segment and the Smiths Harbor Switchyard concluded that the proposed actions are not likely to have any direct, indirect, or cumulative adverse effects on listed fish species or their critical habitats (sockeye salmon, chinook salmon, steelhead trout, and bull trout). See Appendix D of this Final EIS for details.

Recent surveys determined that only Pond A at the plant site actively receives irrigation water and entrained fish. Recent snorkel surveys verified the presence of fish in Pond A and the absence of fish in the remaining ponds at the project site (Smayda pers. comm.).

Pond A would be cleared and leveled, irrigation pumps would be disconnected and removed, and the pond would be permanently dewatered. Impacts to fish and fish habitat would be similar to the normal seasonal dewatering of the pond. Fish populations are not self sustaining due to predation, dewatering, and desiccation as the pond dries up once irrigation water has ceased. The pond does not support listed fish species. Any fish that reach the pond are entrained and pumped into the ponds due to the lack of screening at the pump intakes.

In the longer term, fish mortality would be reduced by eliminating entrainment in the pond and subsequent dewatering of the pond. The statement on pages 3.7-10 and 3.7-11 of the Draft EIS that construction of the project would eliminate entrainment of fish into the Casey Slough irrigation system was incorrect. The Draft EIS did not consider that there were other irrigators using water pumped from Casey Slough and therefore the pump would continue to operate.

3.8 Energy and Natural Resources

As stated in the Draft EIS (page 3.8-4), the applicant has contracted for new natural gas pipeline capacity. Sufficient natural gas pipeline capacity additions have been identified to supply all anticipated natural gas demands over the economic life of the project. However, the potentially large cumulative demand for natural gas in light of the many energy facilities proposed in the Pacific Northwest may limit the ample supply predicted. Please see Section 3.17, Cumulative Impacts, for a more detailed discussion of future cumulative gas supply issues.

3.9 Noise

Walla Walla County's environmental noise ordinance essentially applies the same criteria as the state of Washington Regulations on Environmental Noise Levels (Chapter 173-60 WAC). For sound sources located within the County of Walla Walla, the allowable maximum permissible sound levels per Walla Walla County Noise Code 9.20 are presented in Table 3.9-1.

These sound levels are maximum levels that can only be exceeded for certain periods of time: 5 dBA for no more than 15 minutes in any hour; 10 dBA for no more than 5 minutes of any hour; or 15 dBA for no more than 1.5 minutes.

Sound level reductions of 10 dBA must be achieved between the hours of 10 p.m. and 5 a.m. during weekdays, and between 10 p.m. and 9 a.m. on weekends, where the receiving property lies within a residential district of the county. Periodic sounds, those with a pure tone component, or impulsive and not measured with an impulse-level meter must be reduced by 5 dBA.

Construction activities during daytime hours are exempt from noise regulations between 5 a.m. and 10 p.m. on weekdays and between the hours of 5 a.m. and 11 p.m. on weekends. Exemptions also apply to sounds created by safety and protective devices, such as relief valves, where noise suppression would defeat the safety release intent of the device. Traffic on public roads, aircraft, and railroad traffic are exempt from the applicable environmental noise limits.

The modeled noise levels for the proposed project are lower than the allowable limits specified by the County noise ordinance.

Table 3.9-1. Maximum Permissible Sound Levels in Walla Walla County per County Code 9.20 (dBA)

District of Sound Source	District of Receiving Property Within the County of Walla Walla			
	Rural	**Residential**	**Commercial**	**Industrial**
Rural	49	52	55	57
Residential	52	57	57	60
Commercial	55	57	60	65
Industrial	57	60	65	70

3.10 Land Use

Zoning Update

A zoning correction for the project area was recently approved by the Walla Walla County Commissioners. The area is now considered Heavy Industrial (IH) as per Ordinance No. 274 "Regarding a Technical Nonsubstantive Correction to the County Comprehensive Plan Land Use Map(s), Zoning Map(s) and Development Regulations" dated June 5, 2002. As per Ordinance 274, the area where the generation plant would be sited has been zoned for heavy industrial uses.

Refinement of Transmission Line Acreage Impacts

This section provides updated information about the acreage of impacts within the 5.1-mile transmission line, transmission line access roads, and the switchyard.

New right-of-way required for the Smiths Harbor-McNary segment would be 200 feet wide when it parallels north of the existing Bonneville transmission line and 140 feet wide when it parallels north of the existing PacifiCorp transmission line. The distance from centerline to centerline of the segments paralleling the Bonneville transmission line is 200 feet and the segments paralleling the PacifiCorp transmission line is 125 feet. The new transmission line route would require approximately 1 square mile or 610 acres of new right-of-way. The right-of-way for the 5.1-mile interconnect would be 150 feet wide and would require approximately 93 acres of new right-of-way.

Construction of the 500 kV transmission line would take a total of 12 months (summer 2003 through summer 2004). Use of staging areas may temporarily disturb 41 acres of land. It is unknown at this time what these lands would be used for, and for how long they would be out of production. Tower construction within the 5.1-mile interconnect would temporarily impact approximately 6.0 acres and permanently impact approximately 1.2 acres of grasslands, agricultural areas, and shrubland. An additional 2.6 acres would be temporarily disturbed for pulling and reeling sites during tower installment.

Access for construction would generally use existing roads. In some instances, new temporary access roads would be needed in areas without existing roads. A right-of-way of 50 feet would be acquired for new access roads outside of the present right-of-way. However, an area about 25 feet wide would be the area disturbed. The estimated impact for access road construction and improvement is based on a conservative assumption of 25-foot road width. The widths necessary for access road development vary between 16 and 30 feet and are predominantly around 20 feet. All existing roads are approximately 20 feet wide but may require up to a 4-foot widening and compaction of the road surface. For existing access roads outside of the right-of-way where Bonneville does not have an existing easement, an easement for 20 feet of right-of-way would be secured. Construction of 70 to 80 spur roads (less than 250 feet long) on existing right-of-way would be needed to access new structure sites. Total potential impact for construction of new access roads, spur roads, and improvements to existing access roads would range between 45.1 and 70.2 acres (see Table 3.4-2 in Section 3.4 of this Final EIS).

Any disruption to farming activities would be limited to one growing season. Therefore, land use impacts of temporary access roads are considered low.

Each tower structure would take from 1 to 3 days to erect. An area of approximately 0.25 acre would be disturbed during the assembly and erection process. The structures would normally be assembled in sections at a structure site and lifted into place by a large crane (30- to 100-ton capacity). Occasionally, the structures would be assembled at a remote staging area and placed on the footings by large sky-crane helicopters.

Approximately 7 acres of shrub-steppe would be permanently removed for construction, operations, and maintenance of the Smiths Harbor Switchyard.

Table 3.10-1 below provides updated impact acreages for the entire transmission line.

Table 3.10-1. Impacts to Land Use Types from Tower and Conductor Construction

	Standard Towers (1,150 ft average span)			Standard Towers + Alternate Towers (1,500 ft average span)				Pulling and Reeling Sites
	No. Towers	Acres Disturbed		No. Towers		Acres Disturbed		Acres Disturbed
Land Uses		**Temporary**	**Permanent**	**Standard**	**Alternate**	**Temporary**	**Permanent**	**Temporary**
Small Grains	27	6.8	1.4	0	21	5.3	1.1	2.9
Shrubland/ Grassland/ Herbaceous	97	24.3	4.9	53	40	23.3	4.7	10.6
Pasture/Hay/ Row Crops/ Fallow	30	7.5	1.5	26	0	6.5	1.3	3.3
Low Intensity Residential	2	0.5	0.1	2	0	0.5	0.1	0.2
Commercial/ Industrial/ Transportation	2	0.5	0.1	2	0	0.5	0.1	0.2
Emergent Herbaceous Wetlands	5	1.3	0.3	2	0	0.5	0.1	0.2
Total	**163**	**40.9**	**8.2**	**85**	**61**	**36.6**	**7.4**	**17.4**

Notes:
Temporary impact = 0.25 acre/tower
Permanent impact = 0.05 acre/tower
Pulling and reeling temporary disturbance = 1 acre/2 miles along the transmission line (acreage estimated by prorating abundance of each land use within the transmission line right-of-way).

Clarification of Requirements for Crossing McNary National Wildlife Refuge

The following excerpts from the Cooperative Agreement between the Department of the Army and the U.S. Department of the Interior, Fish and Wildlife Service (January 13, 2000) clarify the working relationship between the Corps and USFWS if easements were required to construct the transmission lines or natural gas pipeline through the McNary National Wildlife Refuge. This information is provided in response to comments on the Draft EIS.

> This Cooperative Agreement shall be subject to the provisions and conditions of the General Plan and the following conditions:
>
> 4. That the use of the Premises for wildlife conservation, management and recreation shall be subject at all times to occupation and use by the Department [of the Army] for all purposes of the project. The District Engineer shall give 120 days notice to the Service [USFWS] prior to conducting any activities on the premises covered by this Cooperative Agreement which may substantially affect the wildlife conservation, management or recreation programs.
>
> 8. The Department [of the Army] reserves unto itself the right to grant easements, leases and licenses for any purpose whatsoever. Any application for easements, leases or licenses received by the Service [USFWS] shall be referred with recommendations to the District Engineer for processing. Applications for easements, leases and licenses received by the Department [of the Army] will be coordinated with the Service [USFWS] for its recommendations. The Department [of the Army] will give full consideration to any adverse effect that any proposed grant may have upon the wildlife conservation, management or recreation programs prior to the execution of any such easement, lease or license.

3.11 Visual Resources/Light and Glare

Updates to the Draft EIS Section 3.11 include the incorporation of the recently constructed Florida Power and Light Energy (FPL) wind farm in both text and visual simulations and the creation and revision of several visual simulations to better reflect impacts of the proposed transmission line. Overall, the analysis indicates that the new transmission line would have a low level of impact in all visual assessment areas, with the exception of Area 5, which has a medium rating.

One visual feature that the Draft EIS did not consider was the recently constructed FPL wind farm, which crosses the transmission line corridor at the north end of Visual Assessment Area 3 and can be seen in the background in Visual Assessment Areas 1 and 2. (See Figure 3.11-10 of this Final EIS for Visual Assessment Area locations. As in the Draft EIS, graphics in this section illustrating the transmission line are numbered beginning with Figure 3.11-10.) The wind farm has been included in new simulations (presented in the following pages) and is considered to have a low visual impact. Because the wind farm and existing transmission line corridors have previously impacted the visual resources in the area, it is unlikely that the addition of the Wallula Power Project and associated transmission line would attract much attention or create significant visual impacts.

Another revision is that reference to the "McNary State Wildlife Recreation Area" has been changed to the "Wallula Habitat Management Unit (HMU)". The U.S. Army Corps of Engineers owns the Wallula HMU, but the property is managed, operated, and maintained by the U.S. Fish and Wildlife Service.

Bonneville also revised and created additional visual simulations to more accurately portray the impacts of the proposed transmission line. Figures that appeared in the Draft EIS that have changed (in figure number, title, and/or content) include:

- Figure 3.11-11: Existing View: Wallula Power Project View
- Figure 3.11-12: Existing View: Ft. Walla Walla View
- Figure 3.11-13: Existing View: McNary State Wildlife Recreation Area View
- Figure 3.11-14a: Existing View: Plateau View North
- Figure 3.11-14b: Plateau View North with a Simulated Transmission Line View
- Figure 3.11-15: Existing View: Hat Rock State Park View
- Figure 3.11-16a: Existing View: Highway 730 Roadside Southwest Viewpoint
- Figure 3.11-16b: Highway 730 Roadside Southwest Viewpoint with a Simulated Transmission Line View
- Figure 3.11-17: Existing View: McNary Lock and Dam View

New and revised figures (presented in the following pages) are listed and briefly described below.

- **Figure 3.11-11a (existing) and 3.11-11b (proposed): Project Beginning View (Assessment Area 1).** Figure 3.11-11a shows the beginning view from Highway 12, and Figure 3.11.11b shows the same view with the proposed transmission line in place.
- **Figure 3.11-12a (existing) and 3.11-12b (proposed): Boise Cascade Tree Farm Southwest (Assessment Area 1).** Figure 3.11-12a depicts a view from near the Boise Cascade Tree Farm looking southwest, and Figure 3.11-12b shows the same view with the proposed transmission line in place.
- **Figure 3.11-13a (existing) and 3.11-13b (proposed): Access Road (Assessment Area 1).** Figure 3.11-13a depicts a view near an access road in assessment area 1 looking southeast, and Figure 3.11-13b shows the same view with the proposed transmission line in place.
- **Figure 3.11-14a (existing) and 3.11-14b (proposed): Smiths Harbor Switchyard (Assessment Area 1).** Figure 3.11-14a depicts the existing transmission line looking southeast from an access road located approximately 1.25 miles east of the community of Wallula. Figure 3.11-14b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-15a (existing): Fort Walla Walla (Assessment Area 1).** This figure depicts the view looking south from Fort Walla Walla Historical Monument located just off of Highway 12.

- **Figure 3.11-16a (existing) and 3.11-16b (proposed): Wallula Habitat Management Unit (Assessment Area 2).** Figure 3.11-16a is a view from the Wallula HMU lookout facing east to the proposed transmission line. Figure 3.11-16b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-17a (existing) and 3.11-17b (proposed): Plateau View (Assessment Area 3).** Figure 3.11-17a depicts a typical view from Hatch Grade Road (elevation 1,070 feet) looking northeast at the transmission line corridor above the Columbia River valley. Figure 3.11-17b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-18a (existing): Hat Rock State Park (Assessment Area 4).** Figure 3.11-18a depicts low rolling hills, looking south across U.S. Highway 730 to the existing Lower Monumental–McNary transmission line and the proposed project corridor.

- **Figure 3.11-19a (existing) and 3.11-19b (proposed): Highway 730 (Assessment Area 5).** Figure 3.11-19a represents a view looking south from Highway 730 and includes views of the roadway, the existing Lower Monumental–McNary transmission line, and the vegetated field beyond. Figure 3.11-19b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-20a (existing) and 3.11-20b (proposed): Option 1 into McNary (Assessment Area 6).** Figure 3.11-20a depicts the current view of the proposed alignment, and Figure 3.11-20b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-21a (existing) and 3.11-21b (proposed): Option 2 Into McNary (Assessment Area 6).** Figure 3.11-21a depicts the current view of the proposed alignment, and Figure 3.11-21b depicts this same view with the proposed transmission line in place.

Following is a discussion of the images shown in the new and revised figures:

- Figures 3.11-11, 3.11-12, and 3.11-13 have a Scenic Quality Rating C (view fairly common to the physiographic region). Some variety in vegetation, subtle color variation, and adjacent scenery (e.g., the Columbia River) moderately enhance overall visual quality in this area. The visual impacts from the perspective of the highway and within the corridor are expected to be low.

- Figure 3.11-14 also has a Scenic Quality Rating C. The viewscape is characterized by subtle color variation, little variety or contrast in vegetation, and is not influenced by adjacent scenery in terms of overall visual quality. Because the area is sparsely populated, the sensitivity level in the area is assessed as low to medium. Typical viewers include agricultural workers who may not be highly sensitive to visual change.

  The area is categorized in Visual Resource Management Class IV (an area with features more common to the physiographic area that has either low viewer sensitivity or is viewed only as a background or is seldom seen). There is no contrast rating on Highway 12, but the contrast rating is strong within the project corridor. This level of contrast is consistent with the Class IV visual resource rating given to this view (visual changes associated with the project may dominate the view and be the major focus of viewer attention within the corridor). Overall visual impacts within the corridor are expected to be low, and no impacts are expected on Highway 12.

- Figure 3.11-15 depicts an area with a weak contrast rating on Highway 12, and a moderate contrast rating in the corridor. Overall impacts from this perspective are considered low, and the level of contrast is acceptable for the visual resource Class III.

- The Wallula HMU view is located between U.S. Highway 12 and the proposed transmission corridor (Figure 3.11-16). Because of the distance of U.S. Highway 12 from the proposed project (about 1 mile), short duration of the view, the location of new structures adjacent to existing ones, and the recent addition of the FPL wind farm, the new structures would be seen but would not likely attract attention. The impact level would be low.

- The proposed transmission line would attract attention because of its scale in relation to the fields of grassland above the Columbia plateau (Figure 3.11-17b). However, the number of casual observers is low and the area is already impacted by the wind farm and existing transmission lines. The corridor may be visible from higher locations above the river. Adding a second set of structures and conductors might increase reflected light in late evening hours from the transmission line to these locations.

- Visual impacts from the Hat Rock State Park View would be low as described in the Draft EIS. The existing view is shown in Figure 3.11-18.

- In assessment area 5, the proposed structures would present an obvious contrast from the existing structures to viewers on U.S. Highway 395 and U.S. Highway 730 (see Figure 3.11-19). The impact level of the proposal would be medium.

- There is not expected to be a noticeable difference in visual impacts between the two options for approaching the McNary Substation (Figures 3.11-20 and 3.11-21). Both options are in an area with numerous transmission towers and lines. Visual impact would be low because the proposal would not stand out from similar elements in the view.

[insert figure 3.11-10]

[insert figure 3.11-11]

[insert figure 3.11-12]

[insert figure 3.11-13]

[insert figure 3.11-14]

[insert figure 3.11-15]

[insert figure 3.11-16]

[insert figure 3.11-17]

[insert figure 3.11-18]

[insert figure 3.11-19]

[insert figure 3.11-20]

[insert figure 3.11-21]

3.12 Population, Housing, and Economics

There were no changes to the Draft EIS text for this section.

3.13 Public Services and Utilities

The applicant has executed a Local Project Mitigation Agreement with Walla Walla County that would address and provide for local infrastructure impacts. Wallula Generation will pay Walla Walla County $1.2 million in permit fees and socioeconomic impact fees and will fund a $50,000 interest-bearing suspense account for unanticipated, extraordinary expenses related to the project.

3.14 Cultural Resources

Additional Historic Resources

In May 2002, Entrix surveyed the new 5.1-mile interconnect and new access road locations for the transmission line. Previous field investigations resulted in the identification of three archaeological sites, identified as temporary field numbers Wallula Site No. 1, Wallula Site No. 2, and Wallula Site No. 3. These were described in the Draft EIS. In 2002, Entrix also identified two segments of irrigation canals associated with the Bureau of Reclamation Service's Umatilla Project.

For each newly discovered archaeological site, field staff recorded specific information describing the location, site type, and associated features or artifacts on the relevant Washington or Oregon Archaeological Site Inventory Forms. Photographs and site maps were prepared to accompany the site forms submitted to the relevant state archaeologist. Entrix recorded the Umatilla Project irrigation canal segments identified during the survey on an Oregon Historic Property Form.

Two of the four archaeological sites identified during the surveys conducted by Lithic Analysts and Entrix have been formally evaluated for eligibility to the National Register of Historic Places (NRHP) as defined in 36 CFR 60.4. Wallula Site No. 1 and Wallula Site No. 2 have been determined eligible for the NRHP under Criterion d by the Washington State Archaeologist. A final determination of NRHP eligibility on the other two sites will be obtained from the Oregon State Archaeologist. The Historic Property Inventory Form for the Umatilla Project will be submitted to the Oregon State Historic Preservation Officer for review. Previous studies of different portions of the Umatilla Project suggest that it is eligible for the NRHP as part of a historic district (Deleon 2002).

The construction of overhead transmission lines would not impact the Umatilla Irrigation Project canals. The construction of transmission line towers and new access roads would avoid the canals.

Text Correction Regarding Tribal Rights

In response to a correction from the Confederated Tribes of the Umatilla Indian Reservation, the following revision is made to the Draft EIS, in the last paragraph on page 3.14-6:

> All ~~rights,~~ title ~~, and claim~~ to the CTUIR's aboriginal territory (6,400,000 acres), excepting the reservation lands, ~~were~~ was ceded~~.~~; however, some rights and claims are still recognized.

3.15 Traffic and Transportation

Resolution of Construction Access to Plant Site

The applicant's original proposal included creating a new temporary access on U.S. Highway 12 at approximately milepost 301.9. However, WSDOT opposed the idea due to its inconsistency with limited-access plans for U.S. Highway 12. Since the publication of the Draft EIS, WSDOT and the applicant have reached a Settlement Agreement that eliminates the U.S. Highway 12 access road as an alternative and instead relies upon the Dodd Road access road during both construction and operation.

The applicant has committed to the following activities as per the Settlement Agreement Between Washington State Department of Transportation and Wallula Generation LLC:

1. The Wallula Power Project will access U.S. Highway 12 from Dodd Road for both construction and operation. The access point from the power plant to Dodd Road will meet WSDOT setback requirements from the intersection of Dodd Road and U.S. Highway 12.

2. WSDOT will work with Wallula Generation, LLC to review the traffic volume projections and the construction schedule for the WSDOT U.S. Highway 12 improvement project to support consideration of a temporary traffic signal installation at Dodd Road/ U.S. Highway 12 during construction of the Wallula Power Project.

3. Any such necessary traffic control, including a possible temporary signal, shall be designed, installed and removed at the sole expense of Wallula Generation, LLC.

Additional Detail about Transmission Line Access Roads

Existing county and agricultural roads would provide general access to the new transmission line rights-of-way and switchyard. An access road system currently exists for the Bonneville Lower Monumental–McNary transmission line. Most of these roads parallel the existing transmission line and would be used in many areas to access the new transmission line. Reconstruction or reconditioning of portions of the existing road system would be required. New access roads would also be constructed to service the transmission line between the generation plant and the Wallula switchyard. Bonneville would acquire any additional easements for new roads from the landowners.

The existing Lower Monumental–McNary transmission line is maintained via access roads extending from nearby highways. Six roads originate from U.S. Highway 12 in the vicinity of the project area and six access roads originate from U.S. Highway 730. Two access roads have State Highway 207 as a starting point. Two existing access points originate from State Highway 37.

General access to the Wallula-Smiths Harbor segment would primarily occur from U.S. Highway 12 and along existing county and agricultural roads. The northern segment of line would be accessed from an existing road in Section 3, Township 7 North, Range 31 East. This system of existing roads crosses the Union Pacific Railroad and the Burlington Northern Railroad. These existing railroad crossings would be utilized to access the new transmission line right-of-way. A new 16-foot-wide access road within the right-of-way paralleling the transmission line would be constructed along the eastern boundary of Sections 2, 11, and 14, Township 7 North, Range 31 East, to the southeast corner of Section 14, Township 7 North, Range 31 East. The access road generally follows an existing agricultural road along the east boundary of Boise Cascade tree farm, but would need extensive reconstruction. An existing 20-foot-wide access road would be utilized from the southeast corner of Section 14, Township 7 North, Range 31 East easterly along the northern boundary of Section 24, Township 7 North, Range 31 East. The access road and right-of-way end at the Smiths Harbor Switchyard location.

3.16 Health and Safety

There were no changes to the Draft EIS text for this section.

3.17 Cumulative Impacts (Impacts of Proposed New Power Projects in the Pacific Northwest)

This section updates information on cumulative air quality and natural gas supply impacts in response to comments on the Draft EIS. It also provides updated information about greenhouse gas mitigation from a Settlement Agreement reached between the applicant and the Washington State Counsel for the Environment.

Corrections to Numbers in Tables

On the second page of Table 3.17-1 in the Draft EIS, in the fourth shaded row labeled “Wallula Power Project,” the Annual CO2 Emissions (tons) in the last column is corrected from 5,251,556 to 4,270,000.

Also, the table on page 3.17-8 of the Draft EIS has been updated as follows:

Table 3.17-1. Comparison of Worldwide vs. Local Greenhouse Gas Emissions

Item	Annual Greenhouse Gas Emissions (MMTCE per year)		
	CO_2	Compounds Other than CO_2	Total
Worldwide emissions (including. U.S.) (1998)	5,660	2,430	8,090
United States emissions (1998)	1,494	340	1,834
Washington State emissions (1995)	21	4	25
Anticipated future gas-fired power plants in Washington and Oregon (15 plants, 7,000 MW)	7	0.8	7.8
Proposed Wallula Plant emissions	1.07	0.12	1.19

MMTCE – million metric tons of carbon equivalent
Sources: IPCC (2001); EPA (2000); CTED (1999); Bonneville (2001a, 2001b, 2001c).

Updated Provisions for Greenhouse Gas Mitigation

Although there are no federal or state regulations requiring new power plants to offset greenhouse gas emissions, EFSEC's application review process encourages applicants to develop some form of greenhouse gas mitigation. In June 2002 the applicant entered into a legal Settlement Agreement with the Washington State Counsel for the Environment, committing to a comprehensive environmental enhancement package. The Settlement Agreement acknowledges that greenhouse gas emissions are an important worldwide environmental issue with potential negative implications for Washington state. The Settlement Agreement stipulates that the Site Certification Agreement issued by EFSEC for the Wallula project shall require payments by Wallula Generation to environmental organizations for purposes of reducing greenhouse gas emissions and enhancing wildlife habitat. Payments totaling $5.35 million would be directly related to greenhouse gas mitigation and renewable energy projects, as follows:

- $1.0 million to the Last Mile Energy Cooperative to fund research into renewable energy and greenhouse gas reduction,
- $2.55 million to the Washington State University Energy Program, to be used to issue requests for proposals for greenhouse gas mitigation and renewable energy projects,
- $1.65 million to the Bonneville Energy Foundation for renewable energy projects including the photovoltaic solar project at the Hanford, Washington site, and
- $150,000 to the Blue Mountain Action Council to fund home weatherization projects.

Acid Deposition and Regional Haze

Section 3.17.2.2 of the Draft EIS is retitled "Impacts of Proposed Power Projects on Regional Class I Areas (Acid Deposition and Regional Haze)" to better reflect the contents of the section.

The discussion of "Descriptors to Quantify Regional Haze" on pages 3.17-9 and 3.17-10 of the Draft EIS has been replaced with the following paragraph:

Impacts to regional haze were evaluated using the methods consistent with the FLAG guidance, as described in Section 3.2.2.2. The modeled light extinction coefficients caused by primary and secondary aerosols formed from the power plant emissions were compared to natural background extinction. An increase above background exceeding 5% constitutes a level of concern, and an increase above background exceeding 10% constitutes a significant impact to regional haze. Background extinction factors for hygroscopic and non-hygroscopic aerosols were provided by the U.S. Forest Service. The background coefficients were similar to or lower than the reference values specified in the FLAG guidance, which were designed to approximate natural background conditions. Therefore, the regional haze assessment provided an appropriately conservative evaluation comparing the future power plant impacts to natural background conditions.

The discussion of "Background Conditions" on pages 3.17-10 and 3.17-11 of the Draft EIS is updated as follows:

Assumed Year 2001 background b_{ext} values represent visibility on the clearest 5% of the days in the Class I/Scenic/Wilderness Areas and the best 20% of days in the CRGNSA and the Spokane Indian Reservation. Background extinction factors for hygroscopic and non-hygroscopic aerosols were provided by the U.S. Forest Service. The assumed background values are similar to or lower than the reference values for natural background b_{ext} values published by the FLMs (FLAG 2000). Background ozone and ammonia concentrations, nitrogen deposition, and sulfur deposition data were based on generally conservative assumptions.

The discussion of "Increase in Ambient Concentrations of SO2, NOx, and PM10" on pages 3.17-12 and 3.17-13 of the Draft EIS is updated as follows:

The increases in ambient concentrations caused solely by the new power plants were compared to the allowable ambient air quality standards and PSD Class I increments. The modeled concentrations for all three scenarios were much lower than the allowable PSD Class I increments, and in nearly all cases were below the Significant Impact Levels. This indicated that, even for the worst-case scenario, new power plants in the region would probably not cause concentrations exceeding regulatory limits (NAAQS standards or PSD increments) at any Class I area. Note however, modeled concentrations below the SILs do not necessarily indicate the future projects would not cause any significant impacts, because even low concentrations of sulfate and nitrate aerosols could contribute to AQRV impacts (increases in regional haze impacts or acid deposition).

The Bonneville study did not attempt to estimate air pollutant concentrations in Class II areas near each individual power plant. The impacts near each plant are evaluated based on detailed air quality modeling required under each plant's air quality permit application. Each individual permit application is reviewed by the appropriate regulatory agency to ensure that the power plant does not contribute to exceedances of the Ambient Air Quality Standards.

For example, the Wallula Power Project would be located in an existing PM10 nonattainment area. As described in Section 3.2 of this EIS, the Wallula project is required to install LAER emissions controls and to procure off-site emission offsets to ensure the project would not contribute to the existing PM10 exceedances.

The discussion of "Increase in Sulfur and Nitrogen Deposition" on page 3.17-13 of the Draft EIS has been updated as follows:

Increases in acid deposition at the Class I areas caused solely by the new power plants were compared to existing background values and recognized impact thresholds. In most of the Class I areas the existing background deposition rates are much higher than impact thresholds established by the U.S. Forest Service and the National Park Service, indicating that existing air quality is already significantly impaired. The modeled worst-case increases caused solely by new power plants would be a small fraction of the existing background values.

Note however, the assessment of additional acid deposition must consider recent studies that revealed existing ecological impacts related to sulfur and nitrogen deposition along the eastern Cascade range (Geiser and Bachman 2002). As described in Section 3.2.1 studies have revealed measurable shifts in the distribution of sensitive lichen species, presumably related to current levels of acid deposition caused by existing air pollutant sources east of the Cascades. In that context, it is uncertain whether relatively small increases in acid deposition caused by future power plant emissions could exacerbate the existing adverse impacts.

The table on page 3.17-18 of the Draft EIS has been revised. The two right-hand columns of the table have been deleted. An updated version is shown below.

Table 3.17-2. Contribution of the Wallula Power Project (By Itself) to Regional Haze Firing by Primary Fuel

Area of Interest	Wallula Power Maximum Extinction (1/Mm)	Wallula Power Maximum Change to Year 2001 Background Extinction (%)
CRGNSA	1.48	3.5
Mt. Hood Wilderness	0.83	3.5
Spokane Indian Reservation	0.58	1.8
Three Sisters Wilderness	0.16	1.18
Mt. Adams Wilderness	0.42	2.13
Alpine Lakes Wilderness	0.21	1.40
Diamond Peak Wilderness	0.04	0.25
Eagle Cap Wilderness	0.34	2.21
Glacier Peak Wilderness	0.33	1.82
Goat Rocks Wilderness	0.26	1.31
Hells Canyon Wilderness	0.22	1.21
Mt. Jefferson Wilderness	0.29	1.72
Mt. Baker Wilderness	0.15	0.68
North Cascades National Park	0.15	0.84
Olympic National Park	0.16	0.65
Pasayten Wilderness	0.11	0.57
Mt. Rainier National Park	0.12	0.88
Strawberry Mtn. Wilderness	0.10	0.63

Notes:
For the Wallula Power Project peak 24-hour gas-fired emissions were assumed for all days of the year. Cumulative predictions include emissions from the power projects listed in Table 3.17-8 of the Draft EIS fired by their primary fuel.

Background extinction coefficients are based on aerosol concentrations during days with the top 5% best visibility for all areas except the CRGNSA and the Spokane Indian Reservation. The CRGNSA and Spokane Indian Reservation background extinction is based on the average for the top 20% at the Wishram monitoring site.

The text discussing "Uncertainty Analysis" on pages 3.17-20 and 3.17-21 of the Draft EIS has been updated as follows:

Overprediction

The above analysis probably overpredicts the number of days of regional haze impact caused solely by the modeled emission sources, because it assumes a background condition consisting of exceptionally clear weather for 365 days per year. In reality, several of the modeled worst-case meteorological episodes occurred during the winter with fog, drizzle, and overcast conditions. For example, the modeled 1-day episode affecting the Mt. Hood Wilderness occurred on a day with easterly flow during the winter. Under these conditions the turbine plumes are embedded in cold moist air, promoting the formation of nitrate particles that would exacerbate downwind regional haze if the weather was clear. However, concurrent weather observations at Pasco, Pendleton, and The Dalles indicate fog and poor existing visibility sometimes accompanied these episodes. During such cold air outbreak episodes, high winds occur in the western end of the CRGNSA. Background aerosol concentrations will likely be higher due to the resulting fog, low clouds, precipitation and other obscuring weather. Thus, in some cases the modeled impacts predicted in this analysis would not actually be perceptible.

The modeling of wintertime impacts resulting from use of secondary oil firing probably overpredicts the impacts because it assumes each plant that is permitted to use oil as a backup fuel does so continuously for 90 days during the winter. This is a conservative assumption. For example, the Chehalis Generating Facility is permitted to burn oil for only 30 days per year, so the assumption that the plant uses oil for 90 days during the winter probably results in an overprediction of the number of days that plant would impact Mt. Rainier National Park.

Underprediction

Bonneville's Phase I and Phase II studies did not consider existing impacts caused by emissions from existing sources. As described in Section 3.2.1, monitoring data and field studies indicate existing levels of air pollution have already caused adverse environmental impacts.

Bonneville's Phase I and Phase II studies did not consider future cumulative impacts related to population growth and industrial expansion other than new utility power plants. Given the expected population growth in Washington and Oregon, it is likely that the actual future air quality degradation at the Class I areas could be substantially higher than modeled in Bonneville's limited studies.

Additional Discussion of Natural Gas Supply

In the report *Convergence: Natural Gas and Electricity in Washington* (2001), the Washington State Office of Trade & Economic Development (CTED) creates a more cautionary picture of future natural gas supply in light of potentially high cumulative demand. In response to comments on the Draft EIS, a summary of that report has been added below.

Although CTED agrees that enough natural gas reserves and transmission line capacity can be developed to support the predicted expansion of the natural-gas fired electricity generation market in the Pacific Northwest, the report warns that the timing of new plants coming online and the expansion of the region's ability to deliver low-priced gas will significantly impact the stability of the market.

As stated in the report, "if all of the necessary events don't occur in the proper sequence, the industry may experience price spikes leading to temporary economic dislocation, long-term upward pressure on gas prices, or both." The report further cautions that "wholesale electricity and natural gas prices are subject to extreme price volatility, and increasing convergence of the electricity and natural gas markets means that extreme events are likely to affect both markets simultaneously."

Inflated natural gas and electricity prices could also translate into higher residential rates, as was seen in 1999 and 2000 when a combination of high electricity prices, reduced natural gas inventories, and a heavy reliance on natural gas for electricity generation forced sizable and sustained natural gas rate increases. Table 3.17-3 provides average natural gas bill information for households in 1999 and 2000, demonstrating the substantial rate increases that occurred due to volatility in the natural gas market. Furthermore, due to the purchasing mechanisms in place in Washington, volatility in the wholesale electricity market is often passed on to retail customers.

Table 3.17-3. Average Monthly Household Natural Gas Bill for Washington Utilities

Provider	Customers	Jan 1999	Jan 2000	Sep 2000	Jan 2001
Puget Sound Energy	591,000	$41	$47	$61	$77
Cascade Natural Gas	145,000	$37	$41	$45	$60
Avista	119,000	$27	$31	$42	$55
Northwest Natural Gas	38,000	$32	$36	$49	$49

Source: CTED 2001.

Regardless of current supply and demand and future predicted market characteristics, the use of gas, its cost, and the potential for new gas reserve development (or alternatives to it) are determined by market forces not evaluated in this EIS.

Additional Discussion of Natural Gas Pipelines

As described in more detail in *Convergence: Natural Gas and Electricity in Washington* (CTED 2001), the higher than anticipated demand for natural gas in 2000 exceeded the need for transmission facilities predicted by pipeline companies and major shippers. The capacity shortage was exacerbated by the greater dependence on natural gas for energy generation in light of low hydroelectric production. The report states,

> The interstate pipeline system showed severe strain, resulting in price volatility and large price differentials at various points on pipelines serving West Coast markets. This demonstrates that even the existing level of gas consumption for electric generation during low hydro years is not sustainable with current infrastructure; meeting new demand will require major investments in pipeline capacity.

As described in the previous section, market volatility and increased natural gas prices (which incorporate the costs of improving or constructing new conveyance facilities) are often borne by residential users in Washington state, resulting in potentially higher household natural gas rates.

The two methods that can be used to expand natural gas pipeline capacity are (1) increasing operating pressure (requiring upgrades or adding compressor stations) or (2) increasing cross-section (effectively increasing the diameter of the pipe, such as laying additional parallel pipe). To increase capacity, a shipper of natural gas can request additional capacity (or turn back unneeded contracted capacity) in what is called an "open market." If sufficient interest in additional capacity is shown during the open season, the pipeline company applies to FERC for a Certificate of Public Convenience and Necessity that authorizes the project to proceed. Firm commitments must be in place with shippers prior to developing new pipeline capacity. (CTED 2001)

Although the Northwest and GTN pipelines are currently operating at or near their capacity, activities are currently underway to expand the interstate natural gas transmission system. Significant interest during the GTN open season suggests that system expansions could be large enough to accommodate future demand. The pivotal question will be whether this new load will actually materialize, and whether shippers of natural gas will commit to contracting for new pipeline capacities.

Impacts associated with natural gas transmission line routes would be similar (though slightly less intensive) than those associated with transmission line impacts. It is impossible to quantify the total length of pipeline construction projects anticipated in the Pacific Northwest over the next few years, although it is assumed that applicants would consider proximity to natural gas pipelines as an important consideration when selecting a project site, thus limiting the length and cost of natural gas pipeline extensions. Furthermore, applicants would consider natural gas availability on a project-specific basis (i.e., if obtaining the necessary gas supply were not feasible, the project applicant would likely select a different location).

3.18 Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

There were no changes to the Draft EIS text for this section.

3.19 Irreversible or Irretrievable Commitments of Resources

There were no changes to the Draft EIS text for this section.